COURSE GUIDE

EDT 821
INSTRUCTIONAL TASK ANALYSIS AND PSYCHOLOGICAL BASIS OF INSTRUCTIONAL MEDIA

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INTRODUCTION

One of the basic tasks of a teacher is to prepare instruction that would facilitate effective teaching and learning. To be able to do this, the teacher performs Task Analysis. Furthermore, for effective instructional and learning processes, a teacher needs to acquire the skills for selection, usage and application of instructional media. This can only be done if the teacher understands the psychological basis of instructional media. This course therefore is concerned firstly with expounding the principles of task Analysis. The approach it takes in doing this is using principles of instructional system design to design and develop instruction. One of the phases of the instructional system design, which is task analysis is expounded in relation to other phases of the design process.

Secondly, in this course, it is expected that the learners become familiar with the basic theories of learning, how these theories determine instruction in the class room and also the type of instructional resources that have been developed based on the theories.

LEARNING OUTCOMES

After interacting with this course material, you should be able to:

i. Explain Educational terms that relate to instructional systems design and development.
ii. Discuss the relationships among the various phases in instructional systems design and development to the process of task analysis.
iii. Explain the teacher s roles in instructional task analysis.
iv. Explain how systems approach can be applied to task analysis and instructional analysis.
v. Analyse the instructional implications of the basic psychological theories.
vi. List instructional resources that are constituent with the basic psychological theories.

WORKING THROUGH THE COURSE

You should be patient and painstaking in going through the course material. In fact, you are advised to scan through first, and then read with vivid comprehension and thorough digestion of all the units from one to fifteen. All self-assessment exercises should be religiously attempted by you. In case, you are challenged with obstacles and

difficulties, it is advisable to discuss these with your colleagues and facilitator (s) in your Study Centre.

THE COURSE MATERIAL

You will be provided with the following course materials:

- Course Guide
- Study Units of three modules.

However, recommended textbooks are listed which you may find useful.

STUDY UNITS

Module 1 Definition of Related Terms used in Instructional Technology, Instructional System Design and Steps in Instructional System Design

Unit 1 Definition of Related Terms Used in Educational Technology and Purposes of Instructional Technology
Unit 2 Instructional Systems Design
Unit 3 Steps in Instructional System Design
Unit 4 Task Analysis and The Teacher 1
Unit 5 Task Analysis and the Teacher 2

Module 2 Systems Approach and Fundamentals of Application of Systems to Instructions

Unit 1 General Overview of Systems
Unit 2 Systems Approach
Unit 3 Systems Approach in Education and Instruction
Unit 4 Values and Limitations of Systems Approach

Module 3 Psychological Theories and Their Applications to Instruction

Unit 1 Definition of Psychology and Psychological Theories of Learning
Unit 2 The Behaviourist Theory and Applications to Instruction

Unit 3	The Constructivism Theory and its Application to Instruction
Unit 4	The Cognitivist Theory and Application to Instruction

ASSESSMENT

This is in two folds viz: Tutor-Marked Assignment (TMA) and the Examination at the end of the course.

TUTOR-MARKED ASSIGNMENT

It is a formative evaluation of the course in which four assignments will be selected by the programme leader of NOUN and given to you to respond to. The responses will be submitted by you to the Study Centre Director from where they will be collected by your facilitator(s) for assessment. However, the best three scores out of the four assignments will be recorded for you. The TMA accounts for 30% of the total mark for the course.

FINAL EXAMINATION AND GRADING

You will take an examination at the end of the course. This takes care of 70% of the total score for the course. Adequate information will be posted to you about the examination.

SUMMARY

You will study the following in these units:

- Environmental Facilities viz: spatial, thermal, visual, acoustic and aesthetic environments.
- Media Centre Facilities: design, planning, management, and utilisation of media for instructional process.
- Facilities for M-learning adoption and utilisation in teaching and learning process.
- Facilities for Microteaching: teaching skills such as set induction, stimulus variation, questioning, non-verbal communication, instructional media, examples and illustration, planned repetition and closure skills.

MAIN COURSE

CONTENTS **PAGE**

MODULE 1 DEFINITION OF RELATED TERMS USED IN INSTRUCTIONAL TECHNOLOGY, INSTRUCTIONAL SYSTEM DESIGN AND STEPS IN INSTRUCTIONAL SYSTEM DESIGN

UNIT 1 DEFINITION OF RELATED TERMS USED IN EDUCATIONAL TECHNOLOGY AND PURPOSES OF INSTRUCTIONAL TECHNOLOGY

CONTENTS

1.0 INTRODUCTION

The thirst for knowledge globally via education has made nations to clamour for the deployment of resources and simpler methods of acquiring knowledge, especially using technology to access and disseminate information. From the dawn of age, media have been used in one way or the other to communicate meaningful information to people. They connect the past with the present and serve as pointer to the future. Technology seldom plays the same natural role in classrooms that it does in other areas of our daily lives. Prominent educators and

professional educational technologist continue to carry out studies on the utilization of resources that will facilitate the acquisition of pedagogic experiences.

Bukoye (2019) findings revealed inadequate use of instructional materials in most schools and majority of the teachers did not take cognisance of the importance derived from the use of instructional materials while teaching. Those that adopted the utilisation, did not use them appropriately; which exemplifies adequate prominence attached to the use of the available instructional media and resources. The term Educational Technology is a misunderstood expression. It is often used to describe the machinery of hardware of education or a highly structured approach to teaching, like programmed instruction. However, it as an umbrella term that embrace the application of scientific knowledge in the field of education (Onasanya, 2019). You will learn more about Educational Technology in Unit 1. It starts you off by giving you the definition and terms used in Educational Technology, some events that are needed for learning, purpose of instructional technology, instructional system design and Educational Technology.

2.0 LEARNING OUTCOMES

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

- define the following terms
- educational technology
- technology of education
- technology in education
- instruction
- instructional technology
- list the roles of educational technology in education.
- enumerate the benefits of educational technology in teaching-learning process.
- state the nine events needed for effective instruction in the classroom.

3.0 MAIN CONTENT

3.1 What is Educational Technology?

Educational Technology is the application of scientific knowledge about learning and condition of learning, to improve the effectiveness and efficiency of teaching, training and learning. It is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources

(Association for Educational Communications and Technology AECT, 2011). Educational Technology is a specialised area of education that subsumes the idea of adopting the use of local resources for the production of instructional materials and engagement of new media (Onasanya, 2019). Therefore, it is a systematic approach (step-by-step or procedural process) to planning, designing, implementing and evaluating any educational task, using all the relevant human and non-human resources within the immediate environment of the learners, to achieve the pre-determined objective(s) of the programme. Educational Technology involves Technology in Education and Technology of Education

3.1.1 Technology in Education

Technology in education is not the same as educational technology. It is the application of technology to the processes involved in operating institution of learning. Technology in education is related to the use of educational media such as visual, audio and audio-visual learning materials in the course of teaching and learning process; it also called instructive technology. This lays more emphasis on the application of educational media to enhance, augment or facilitate the teaching and learning. In essence, technology in education is considered as enhancement of teaching and learning through technology. It includes the application of technology to teaching, learning, health, finance, scheduling, grade reporting, and other process which support education within institutions

3.1.2Technology of Education

Technology of education, unlike technology in education, technology of education deals with behavioural technology, that is, the methodological concept of the application of technology for the benefits of teaching and learning. It is goals directed and purposeful. It is the systematic and systematic method of designing, developing, developing, evaluating, and utilising resources to achieve instructional objectives and to solve teaching and learning problems. It is the study of sciences applicable in the field of education. It can be deduced that both behavioural sciences and physical science concepts are functionally interrelated. This is the application of behavioural sciences to create a technology of learning. It is the application of knowledge and the processes of technology to the systematic design of education. It is called the software approach. It is the use of the findings from learning research and other forms of knowledge. Technology in education and technology of education are illustrated in the figure below:

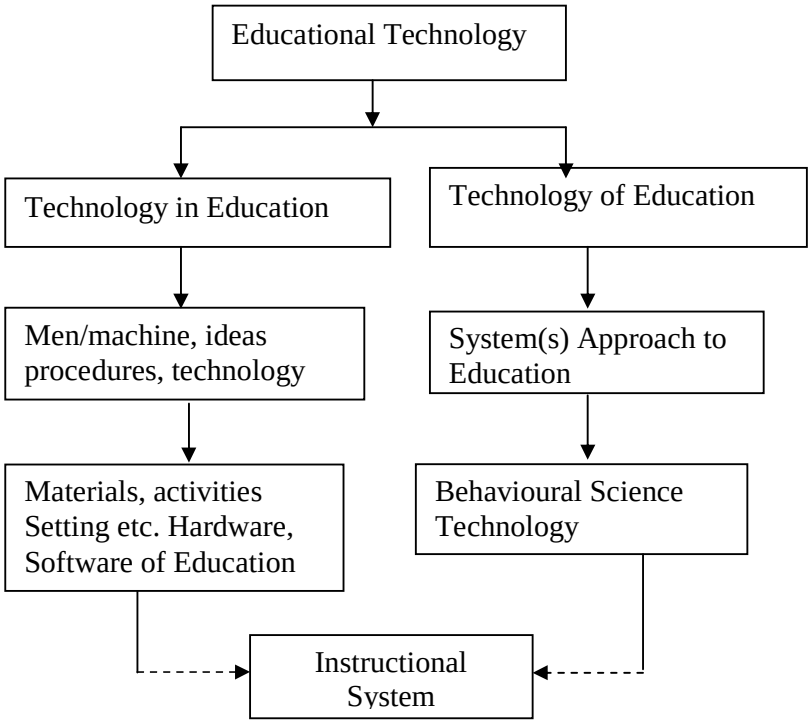

Fig. 1: Functional Definition of Educational Technology
Source: **Zhao & Cziko (2001)*;* Yusuf & Onasanya, (2015)**

3.2 Instruction

Instruction is an activity which is designed to help people to learn. Effects of instruction on learning are usually beneficial and easy to observe as a properly designed instruction focuses on its pre-determined objectives. According to Robert Gagne cited by Khadjooi, Rostami, & Ishaq (2011), there are nine events that are needed for effective learning, thus they include a sequence of events similar to the following:

Fig 2: Khadjooi, K., Rostami, K., & Ishaq, S. (2011)
Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4017416/

1) **Gain attention:** Present a problem or a new situation. Use an "interest device" that grabs the learner's attention. This can be thought of as a *teaser* -- the short segment shown in a TV show right before the opening credits that is designed to keep you watching and listening). The idea is to grab the learners' attention so that they will watch and listen, while you present the learning point. To ensure reception of coming instruction, the teacher gives the learners a stimulus. Before the learners can start to process any new information, the instructor must gain the attention of the learners. This might entail using abrupt changes in the instruction. You can use such devices as:

- Storytelling
- Demonstrations
- Presenting a problem to be solved

- Doing something the wrong way (the instruction would then show how to do it the right way)

2) **Inform learner of Objective:** The teacher tells the learner what they will be able to do because of the instruction. The teacher communicates the desired outcome to the group. This allows the learners to organize their thoughts around what they are about to see, hear, and/or do. There is a saying in the training field to 1) tell them what you're going to tell them, 2) tell them, and 3) tell them what you told them. These cues provide a review which has proven to be effective. e.g. describe the goal of a lesson, state what the learners will be able to accomplish and how they will be able to use the knowledge.
3) **Stimulate recall of prior knowledge:** The teacher asks for recall of existing relevant knowledge. This allows the learners to build on their previous knowledge or skills. Although we are capable of having our "creative" minutes, it is much easier to build on what we already know. e.g. remind the learners of prior knowledge relevant to the current lesson, provide the learners with a framework that helps learning and remembering.
4) **Present the material:** The teacher gives emphasis to distinctive features. Chunk the information to avoid memory overload. Blend the information to aid in information recall. This is directly related to Skinner's "sequenced learning events." This allows learners to receive feedback on individualized tasks, thereby correcting isolated problems rather than having little idea of where the root of the learning challenge lies. Bloom's Taxonomy and Learning Strategies can be used to help sequence the lesson by helping you chunk them into levels of difficulty.
5) **Provide guidance for learning:** The teacher helps the students in understanding (semantic encoding) by providing organization and relevance. This is not the presentation of content, but is instructions on how to learn. This is normally simpler and easier than the subject matter or content. It uses a different channel or media to avoid mixing it with the subject matter. The rate of learning increases because learners are less likely to lose time or become frustrated by basing performance on incorrect facts or poorly understood concepts.
6) **Elicit performance:** The teacher asks the learners to respond, demonstrating learning. Practice by letting the learner do something with the newly acquired behaviour, skills, or knowledge.
7) **Provide feedback**: The teacher gives informative feedback on the learners' performance. Show correctness of the learner's response, analyse learner's behaviour. This can be a test, quiz, or verbal comments. The feedback needs to be specific, not, "you

are doing a good job" Tell them "why" they are doing a good job or provide specific guidance.

8) **Assess performance:** The teacher requires more learner performance, and gives feedback, to reinforce learning. Test to determine if the lesson has been learned. You can also give general progress information.
9) **Enhance retention and transfer:** The teacher provides varied practice to generalize the capability. Inform the learner about similar problem situations, provide additional practice, put the learner in a transfer situation and review the lesson.

Using Gagné's taxonomy of learning outcomes and events of instruction oversimplify the learning process as part of a complete instructional package to assist in becoming more organized and staying focused on the instructional goals.

Instruction is a goal-directed process, which has been pre-planned and tested. It is the arrangement of the external conditions of learning in ways which will optimally interact with the internal capabilities. The function of instruction then, is the control of the external conditions of learning situation. To be effective as a teacher is to be able to achieve the events of instruction. One way by which this can be done is to apply strategies and techniques derived from behavioral, cognitive, and constructivist theories to the instructional design processes termed instructional technology. Hence, instructional technology refers to systematic application of approaches and methods derived from the three learning theories; behaviourism, cognitivism and constructivism to solve educational problems. Instructional technology promises solutions to many educational problems, resistance from teachers to the use of technology in the classroom is not unusual. This reaction can arise from the belief or fear that the ultimate aim of instructional technology is to reduce or even remove the human element of instruction. However, most instructional technologists have a counter reaction that pedagogic experience will always require human intervention from instructors or facilitators.

3.3 Instructional Technology

Instructional technology (IT) is the systemic and systematic application of strategies and techniques derived from behavioral, cognitive, and constructivist theories to the solution of instructional problems. Instructional technology has been defined as the ability to share information using media-based technology (audio, text, video, image, etc.) to facilitate enhanced interaction between educators and targeted learners (Gee, Salazar, Porter, Clark & Peterson, 2017). Furthermore, IT has been classically described as a systematic way of designing, carrying

out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction. The author further expatiates that instructional technology consists of both synchronous and asynchronous technologies. Synchronous technologies allow learners and educators to interact at the same time virtually, while asynchronous technologies allow learners to engage in educational activities at their preferred time based on the requirements of the course. It is the systematic application of theory and other organized knowledge to the task of instructional design and development.

Instructional Technology = Instructional Design + Instructional Development

Instructional design involves designing content/subject matter and delivery strategies including materials and assessment techniques. Instructional Design is the art and science of creating an instructional environment and materials that will bring the learner from the state of not being able to accomplish certain tasks to the state of being able to accomplish those tasks. Instructional Design is based on theoretical and practical research in the areas of cognition, educational psychology, and problem solving. However, Instructional development is the process of implementing the design plans. Instructional Technology is often confused with Educational Technology. Instructional Technology is a sub-set of educational technology, based on the concept that instruction is sub-set of education. It is the development (research, design, production, evaluation, support-supply, utilization) of instructional system components (messages, men, materials, devices, techniques, settings), and the management of that development (organization and personnel), in a systematic manner with the goal of solving instructional problems.

Instructional Technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning. However, Instructional Design seeks to teach how to plan, develop, evaluate and manage the instructional process effectively to ensure improved performance by learners. Instructional Technology's goal is to understand how people learn and how best instructional systems and instructional materials could be designed to facilitate learning. Hence, Instructional Technologists are problem solvers by taking a cursory looking into and comprehending the performance problems and design solutions to those problems. Sometimes the solution could be instructional; while some other times the situation requires a non-instructional solution.

3.4 Purposes of Instructional Technology

The purpose of instructional technology is to make education more productive and more individualistic. The purpose encompasses making instruction to be more scientifically based; more experiential, learning more immediate and accessible to all irrespective of gender and location (UNESCO, 2015). Instructional Technology is to create engaging, effective learning experiences that cater the needs of different individuals. It is the precise procedure of outlining, creating, assessing and dealing with the whole instructional procedure to guarantee successful and proficient learning. Instructional technology is very crucial in delivering good learning experience even with myriads access to unlimited content, instructional design gives it a much-needed direction and purpose. It guides the learners to achieve learning objectives and frames the entire learning experience for effective utilization of those learning objectives.

3.5 Instructional System Design and Educational Technology

The Instructional Systems Design (ISD) process was developed to take the guesswork out of instruction. Rather than rely on assumptions or tradition about what needs to be taught and how best to present it, ISD takes a "systems" look at teaching. Among other things, it takes into account the environment in which learners are expected to eventually perform, characteristics of the learners, and aspects of the learning environment that could impact the effectiveness of the instruction. ISD is also a systematic process, one that suggests a series of steps that probe for the appropriate purpose and approach to the instruction and help guarantee effectiveness through intermediate evaluation and careful implementation. In these ways, the ISD method helps ensure that the instruction will actually be able to solve an identified problem or achieve a desired goal. However, there is growing tendency to relate educational technology to the process of planning by which an instructional system design is developed, implemented, controlled and evaluated. Instructional technology is usually used specifically to designate the process of teaching and learning through purposeful use of teaching/learning strategies and communication media and Educational technology is used as a broader term to indicate the use of technology in any aspect of the educational enterprise.

The influences of Instructional System Development include the following developments: (a) interest in individual differences in learning, as seen in educational and military research and development programmes, in self-instructional devices; the branching programmes of Crowder and in computer applications to instruction; (b) behavioural science and learning theory propounded by Skinners theory that

emphasized upon contingencies of reinforcement and teaching machines and in other learning theories; and (c) physical science technology, as represented in motion-picture, television and video-tape instruction; and in audio-visual devices to supplement printed media. All of these streams of development, along with the conceptions of learning outcomes categories and their associated instructional events can be harmoniously utilized in the design of instructional systems which give primary attention to the individual learner s activities and to the testing of their outcomes.

4.0 CONCLUSION

In education, instructional technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning. Instructional technology is often referred to as part of educational technology. While instructional technology covers the processes and systems of learning and instruction, educational technology includes other systems used in the process of developing human learning.

5.0 SUMMARY

Instructional technology is a subset of Educational technology. Instructional technology can be divided into 2 parts. One is teaching technology and another is learning technology. In the education industry, the term "instructional technology" is frequently used interchangeably with "educational technology." This is not a good practice. Instructional technology is a growing field of study which uses technology as a means to solve instructional challenges in the classroom whereas educational technology is the technology that prescribes the design of instructional processes and materials and then structures learning interactions for maximum benefit.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the following terms
   - Educational Technology
   - Technology of Education
   - Technology in Education
   - Instructional Technology
2. Differentiate between Technology in education and Technology of Education.
3. Differentiate between Educational Technology and Instructional Technology.
4. State and explain the nine events of instruction.

5. What is the purpose of instructional technology in the teaching-learning process?

7.0 REFERENCES/FURTHER READINGS

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UNIT 2 INSTRUCTIONAL SYSTEMS DESIGN

CONTENTS

1.0 INTRODUCTION

Instructional design is the systematic process of designing, developing, managing and evaluating the entire instructional process to ensure effective and efficient learning. It is based on what we know about instructional and learning theories, systems design, information systems and management. The basic elements of instructional design include:

- Analyze learner and organization needs
- Determine instructional goals and objective
- Construct a method for evaluating learner achievement
- Design and select instructional strategies
- Implement the training
- Evaluate the training

2.0 LEARNING OUTCOMES

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

- define instructional system design
- identify the basic components of the analysis phase
- identify the basic components of the design phase
- identify the basic components of the development phase
- identify the basic components of the implementation phase
- identify the basic components of the evaluation phase
- differentiate between instructional system development and instructional system design.

3.0 MAIN CONTENT

3.1 Instructional Systems Design

3.1.1 What is Instructional System Design?

Instructional design is the creation of learning experiences and materials in a manner that results in the acquisition and application of knowledge and skills. The discipline follows a **system** of assessing needs, **designing** a process, developing materials and evaluating their effectiveness.

In other words, Instructional System Design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

Instructional System Design is a field that prescribes specific instructional actions to achieve desired instructional outcomes. The process decides the best methods of instruction for enacting desired changes in knowledge and skills for a specific course content and learner population. Instructional System design is usually the initial stage of preceding systematic instruction, for which there are dozens of models.
The Instructional System design model was further extended by analysing 40 models on instructional system design and concluded that instructional design models can serve the following purposes:

- Improving learning and instruction by following a systematic approach;

- Improving management of instructional design and development procedures by monitoring and controlling the functions of the systematic approach;
- Improving evaluation processes (including learner performance; and
- Testing or building learning or instructional theory by means of theory-based design within a systematic instructional model.

Despite the vast number of different models recorded in the literature, there are some basic that elements that reflected in most of the various approaches. These basic elements include the following actions:

- Determining the needs of the learners and examining the learning context and environment;
- Determining the outcomes of the learning programme or course and formulating the learning objectives; Developing appropriate and meaningful assessment criteria and procedures;
- Establishing the most effective approach(es) to delivering the instruction;
- Testing and evaluating the effectiveness of the instructional system (both the instruction itself and the performance of the learner); and
- Implementing, adjusting and maintaining the instructional system

3.1.2 Instructional Design-Different Contexts

a) Instructional Design as a Process: Instructional Design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

b) Instructional Design as a Discipline: Instructional Design is that branch of knowledge concerned with research and theory about instructional strategies and the process for developing and implementing those strategies.

c) Instructional Design as a Science: Instructional Design is the science of creating detailed specifications for the development, implementation, evaluation, and maintenance of situations that facilitate the learning of both large and small units of subject matter at all levels of complexity.

d) Instructional Design as Reality: Instructional Design can start at any point in the design process. Often a glimmer of an idea is developed to give the core of an instruction situation. By the time

the entire process is done the designer looks back and she or he checks to see that all parts of the "science" have been taken into account. Then the entire process is written up as if it occurred in a systematic fashion.

3.2 Addie Model and Instructional Systems Design (ISD)

Instructional System Design is a series of steps leading to the production of a successful training programme ISD has numerous approaches and theories available for use by designers and instructors. One model was particularly effective in providing developers with a generic, systematic framework that was easy to use and applicable to a variety of settings. The ADDIE model (i.e., Analysis, Design, Development, Implementation, and Evaluation) presented users with an approach to **instructional system design** that incorporated an iterative process complete with essential steps for the development of an effective course development and implementation) are generally sequential; the outputs of one programme.

Most ISD approaches contain five major phases (see Figure 3). Instructional design is the *systematic* approach to the **A**nalysis, **D**esign, **D**evelopment, **I**mplementation, and **E**valuation of learning materials and activities. Instructional design aims for a learner-centered rather than the traditional teacher-centered approach to instruction, so that effective learning can take place. This means that every component of the instruction is governed by the learning outcomes, which have been determined after a thorough analysis of the learners' needs. These phases sometimes overlap and can be interrelated; however, they provide a dynamic, *flexible* guideline for developing effective and efficient instruction.

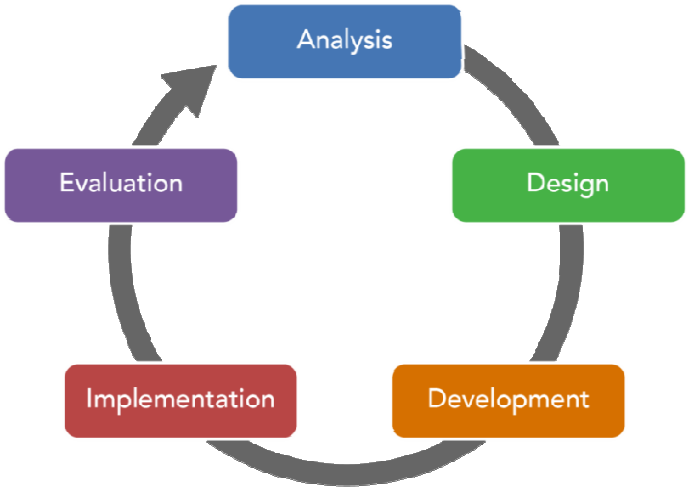


Fig. 3: The phases of ADDIE Instructional Systems Development (ISD) Model
SOURCE: http://www.au.af.mil/au/awc/awcgate/doe/isd/isd_1.htm

3.3 The Addie Framework: Five Phases

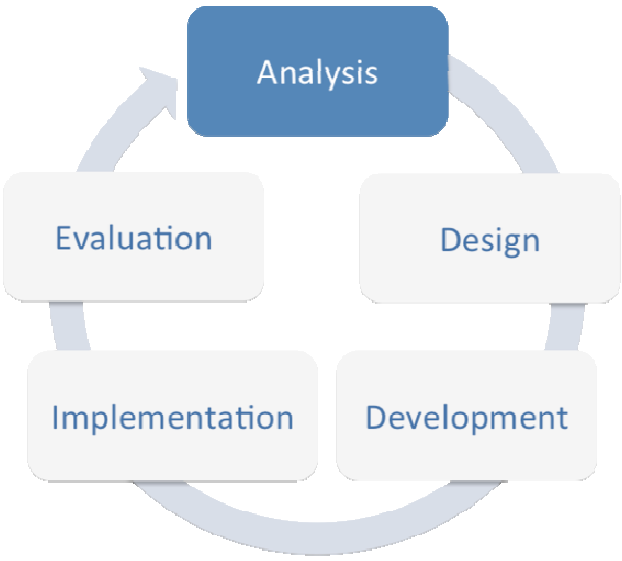
The ADDIE framework is a cyclical process that evolves over time and continues throughout the instructional planning and implementation process. ADDIE Instructional design is a *systematic* approach which the acronym stands for **A**nalysis, **D**esign, **D**evelopment, **I**mplementation, and **E**valuation of learning materials and activities. Five stages comprise the framework, each with its own distinct purpose and function in the progression of instructional design.

3.3.1 Phase 1: Analysis

In the **analysis** phase, the designers' main consideration is the target audience. First, a needs analysis is conducted to determine the needs of the audience by distinguishing between what students already know and what they need to know at the conclusion of the course. The Analysis phase can be considered as the "Goal-Setting Stage". The focus of the designer in this phase is on the target audience. It is also here that the program matches the level of skill and intelligence that each student/participant shows. This is to ensure that what they already know won't be duplicated, and that the focus will instead be on topics and lessons that students have yet to explore and learn. In this phase, instructors distinguish between what the students already know and what they should know after completing the course (Kurt, 2017).

During the needs analysis, instructors or designers examine standards and competencies to establish a foundation when determining what students need by the completion of the course. Information may also be

available from previous course evaluations if the course has already been taught. Subsequently, a task analysis is also necessary to identify the instructional content or the specific skills related to the course. The content of the course or programme can be analyzed with the aid of course texts and sample syllabi, with a similar focus. With the advent of the Internet, many courses are easily accessible online and can provide a framework or workable template for instructors that are developing a course or teaching a course for the first time. Instructional analysis is performed to establish what must be learned. Subsequently, instructional designer is saddled with the responsibility of determining the amount of instruction that is needed in relation to the needs and task analysis. However, If there is great variability among the members of the target audience based on the task analysis, some students will need more and different instruction than others to reach the same goal.



Several key components are to be utilized to make sure analysis is thorough. Course texts and documents, syllabi and the internet are to be employed. With the help of online materials such as web courses, a structure can be determined as the primary guide for the syllabus. At the end of the program, instructional analysis will be conducted to determine what subjects or topics are to be included. According to Kurt (2017), the Analysis Phase generally addresses the following issues and questions:

1. What is the typical background of the students/participants who will undergo the program? Personal and educational information such as age, nationality, previous experiences and interests should be determined. What is the target group? What are the educational goals, past knowledge levels, experiences, ages, interests, cultural background etc. of the learners?
2. What do the students need to accomplish at the end of the program? What are the learner's needs?

3. What will be required in terms of skills, intelligence, outlook and physical/psychological action-reaction? What are the desired learning outcomes in terms of knowledge, skills, attitudes, behavior etc.?
4. Determining popular methods being used around the subject and taking a look at what needs to be developed and improved. Review of existing instructional strategies employed. Are they adequate? What aspects need to be added, clarified and improved upon?
5. Determining target objectives of the project. What instructional goals does the project focus on?
6. Determining the various options available with respect to learning environment. What is the most conducive learning environment? A combination of live or online discussions? What are the Pros and Cons between online- and classroom-based study? What delivery option is to be chosen? What type of learning environment is preferred? Does one opt for online or face-to-face or a blend of both? If online is preferred what will be the difference in learning outcomes between classroom-based learning and web-based learning?
7. Determining limiting factors to the overall goal of the project. What limiting factors exist with respect to resources, including technical, support, time, human resources, technical skills, financial factors, support factors?

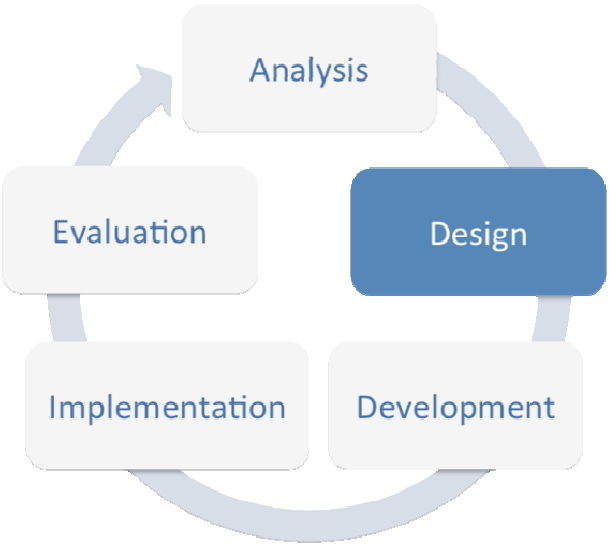
3.3.2 Phase 2: Design

The design process consists of several key activities. Primarily the designer is conducts research and planning throughout this stage. The planning includes the identification of objectives, determining how the objectives will be met, and the instructional strategies that will be employed to achieve the objectives, and the media and methods that will be most effective in the delivery of the objectives. This stage determines all goals, tools to be used to gauge performance, various tests, subject matter analysis, planning and resources. In the design phase, the focus is on learning objectives, content, subject matter analysis, exercise, lesson planning, assessment instruments used and media selection (Kurt, 2017). During the design phase, the designer or instructor must consider the information or data from the analysis phase. If a thorough analysis is not conducted instructors or designers may find that they are replicating their efforts during the implementation stage. Thorough planning is necessary in the first two stages in order to reduce the need for further research or planning later in the program.

Another needed activity during the design process is assessment. As a vital component of the instructional plan, designers determine how

objectives will be assessed and what forms of assessment will be used prior to implementation. The objectives and assessments should align and be meaningful. When aligning goals and objectives with assessments, designers refer to the analysis phase for data that provides requisite information about the learners' characteristics, prior knowledge, and needs. These details can assist instructors and designers in the selection of appropriate assessment methods or strategies. Following these steps as a guide in developing and selecting assessment methods can reduce the likelihood assessment that may occur for the sake of assessment.

If goals, objectives, and assessments do not align, learners may find themselves losing interest in the course or program and may influence the perceptions of the instructional quality. Ultimately, this can affect the long-term retention of participants in the program. Designers that refer to analysis findings and carefully select assessment methods that include a variety of techniques may find that learners are more likely to become actively engaged in the course content. Students' overt and covert participation can contribute to their overall satisfaction and can determine whether students will continue in a program or course or not.



The approach in this phase should be systematic with a logical, orderly process of identification, development and evaluation of planned strategies which target the attainment of the project’s goals. It should follow a very specific set of rules, and each element of the instructional design plan must be executed with attention to detail. Being a stickler for the details is crucial to the success of the design stage. This systematic approach makes sure that everything falls within a rational and planned strategy, or set of strategies, that has the ultimate goal of reaching the project’s targets. According to Kurt (2017), during the design stage, the IDs need to determine:

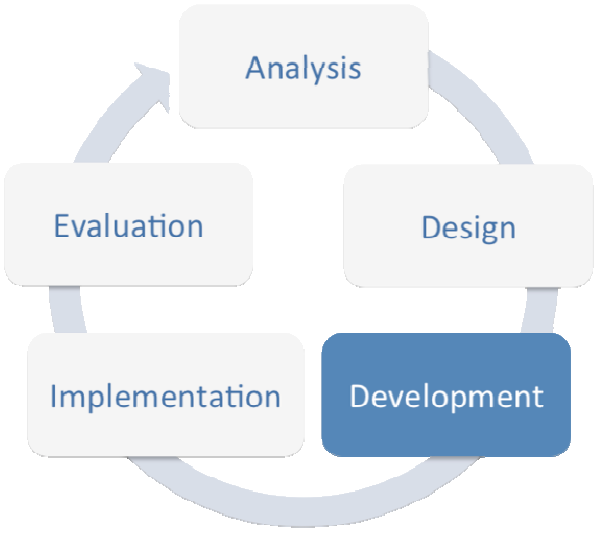
1. Different types of media to be used. Audio, Video and Graphics are prime examples. Are third party resources going to be utilized or will the IDs create their own? Will you prepare the teaching learning material?
2. Various resources at hand that are required to complete the project. What are the available resources at your disposal for completing the project?
3. Level and types of activity to be generated during the study. Is it going to be collaborative, interactive or on a per participant basis?
4. Using a teacher's style approach, how will you implement the parts of the project (i.e. behaviorist, constructivist, etc.)?
5. Time frame for each activity. How much time is to be assigned to each task, and how will learning be implemented (per lesson, chapter, module, etc.)? Do the topics require a linear progression in presentation (i.e. easy to difficult)?
6. The different mental processes needed by the participants in order to meet the targets of the project. What are the prescribed cognitive skills for students to achieve the project's learning goals?
7. Knowledge and skill developed after each task. Do you have a way of determining that such values have indeed been achieved by the students? What is the method adopted by you to determine the acquisition of desired competencies by the students?
8. The roadmap of how the study or project will appear on paper. Will it be advantageous to the ID to create a map of the different activities to see if they are in line with the goal of the project?
9. If the project is web-based, what kind of user interface will you employ? Do you already have an idea on how the site will look like?
10. The feedback mechanism you will use to determine if the participants are able to digest the lessons. What is the mechanism designed by you to obtain the learners' feedback on material learnt?
11. Given the wide variety of student preferences and learning styles, what method will you implement to make sure that the program fits their wants? How will you design your project activities so as to appeal to diverse learning styles and interests of students? Will you opt for variety in delivery options and media type?
12. Pinpoint the main idea of the project (training activity).

3.3.3 Phase 3: Development

The development phase translates design decisions into training materials. This is where the real work of course development is done. According to Kurt (2017), the Development stage starts the production

and testing of the methodology being used in the project. In this stage, designers make use of the data collected from the two previous stages, and use this information to create a program that will relay what needs to be taught to participants. If the two previous stages required planning and brainstorming, the Development stage is all about putting it into action. This phase includes three tasks, namely drafting, production and evaluation.

Using the objectives, instructional approach, and media selections from the design phase, development produces course materials for the students and evaluation instruments. Designers in this stage develop or select materials and media and conduct formative evaluations. Evaluations during the development stage contain a different focus than the actual evaluation format that occurs during stage 5 of the ADDIE process. Encompassing a formative approach, evaluation during the development phase calls attention to the product and the quality standards of the product. Designers are to determine if the students or audience will learn from the product and how it can be improved before implementation.



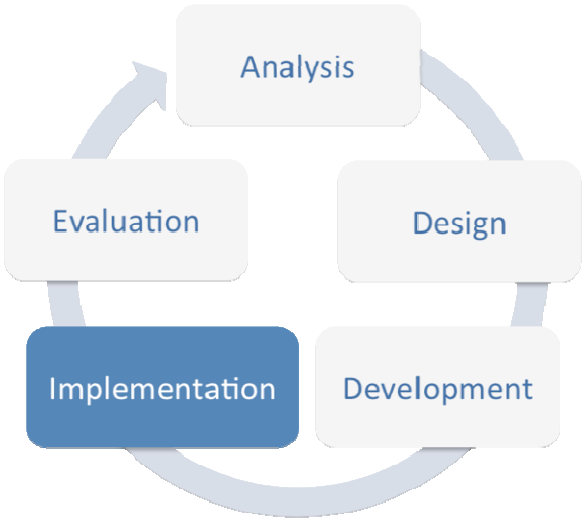
Development thus involves creating and testing of learning outcomes. Kurt (2017) further attested that development stage aims to address the following questions:

1. Is the time frame being adhered to in relation to what has been accomplished in terms of material? Are you creating materials as per schedule?
2. Do you see team work across various participants? Are the members working effectively as a team?
3. Are participants contributing as per their optimal capacity?
4. Are the materials produced up to task on what they were intended for?

3.3.5 Phase 4: Implementation

In the implementation phase, designers must take an active role rather than a passive role. The designer or instructor's role intensifies with the advent of this phase. According to Kurt (2017), the implementation stage reflects the continuous modification of the program to make sure maximum efficiency and positive results are obtained. Here is where IDs strive to redesign, update, and edit the course in order to ensure that it can be delivered effectively. “Procedure” is the key word here. Much of the real work is done here as IDs and students work hand in hand to train on new tools, so that the design can be continuously evaluated for further improvement. No project should run its course in isolation and in the absence of proper evaluation from the IDs. Since this stage gains much feedback both from IDs and participants alike, much can be learned and addressed.

In order for the product to be delivered effectively, developers must continue to analyse, redesign, and enhance the product. It can be counterproductive to the implementation of the program if the product or course is left to function in its natural state. No product, course, or program can be effective without conducting an evaluation and necessary revisions throughout the implementation phase. When the learners and instructor are active contributors in the implementation, modifications can be made instantaneously to the course or program to ensure effectiveness.



Kurt (2017) further attested that design evaluation is done in the implementation phase. Designers play a very active and crucial role in this stage in order to attain considerable success of the project. Developers should consistently analyze, redesign and enhance the product to ensure effective product delivery. Meticulous monitoring is a must. Proper evaluation of the product, course or program, with

necessary and timely revisions, is done in this phase. When instructors and learners actively contribute during the implementation process, instantaneous modifications can be made to the project, thus making the program more effective and successful.

The following are examples of what can be determined:

1. Advise on your preferred method of record keeping, as well as the actual data you would like to mine from the experience of students interfacing with the project.
2. What is the emotional feedback given to you by teachers and students during initial demonstration of the project? Are they genuinely interested, eager, critical or resistant?
3. As the project proceeds, do you see that IDs are able to grasp the topic immediately or do they need help?
4. Explain how you are going to deal with any possible errors during testing. What will your response be if, after presenting activities to students, things do not go as planned?
5. Did you prepare a back-up tool in the event of initial failure of the project? When technical and other problems arise do you have a back-up strategy?
6. Will you go for implementation on a small scale or a large scale?
7. When the student group gets the material can they work independently, or is constant guidance required?

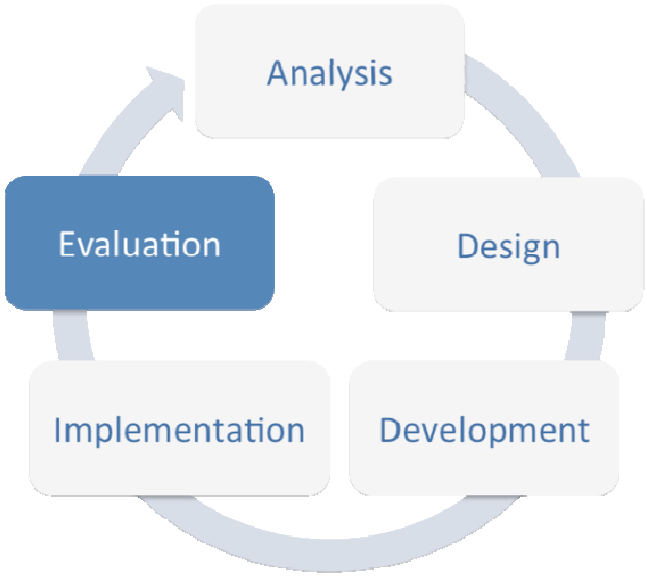
3.5.5 **Phase 5: Evaluation**

The evaluation phase is an essential component of the ADDIE process and is multidimensional. Every stage of the ADDIE process involves formative evaluation. This is a multidimensional and essential component of the ADDIE process. Evaluation is done throughout the implementation phase with the aid of the instructor and the students. After implementation of a course or program is over, a summative evaluation is done for instructional improvement. Throughout the evaluation phase the designer should ascertain whether problems relevant to the training program are solved and whether the desired objectives are met (Kurt, 2017).

The evaluation phase can occur during the development stage in the form of formative evaluations, throughout the implementation phase with the aid of the students and the instructor, and at the end of the implementation of a course or programme in the form of a summative evaluation for instructional improvement. Throughout the evaluation phase, the designer must determine if the problem has been solved (relevant to training programs), if the objectives have been met, the impact of the product or course, and the changes that are necessary in

the future delivery of the programme or course. The evaluation phase should be an integral part in the continuation of analysis and effective implementation of future courses and programmes.

The last stage of the ADDIE method is Evaluation. This is the stage in which the project is being subjected to meticulous final testing regarding the what, how, why, when of the things that were accomplished (or not accomplished) of the entire project. This phase can be broken down into two parts: Formative and Summative. The initial evaluation actually happens during the development stage. The Formative phase happens while students and IDs are conducting the study, while the Summative portion occurs at the end of the program. The main goal of the evaluation stage is to determine if the goals have been met, and to establish what will be required moving forward in order to further the efficiency and success rate of the project (Kurt, 2017).



Evaluation is often overlooked due to time constraints and monetary reasons. However, it is an essential step of the whole ADDIE method as it aims to answer the following questions:

1. Determine the categories that will be established to evaluate the effectiveness of the project (i.e. improved learning, increased motivation etc.) On what factors or criteria will the effectiveness of project be determined?
2. Determine the way you will implement data collection, as well as the timing at which it will be effectively made. When will the data related to the project's overall effectiveness be collected and how?
3. Determine a system for analyzing participant feedback.
4. Determine the method to be used if some parts of the project need to be changed prior to full release. On what basis will you arrive

at a decision to revise certain aspects of the project before its full implementation?

5. Determine the method by which reliability and content validity can be observed.
6. Determine the method by which you will know if instructions are clear. How is the clarity of instructions assessed?
7. Determine the method by which you can analyze and grade the response of the participants on the project.
8. Determine who gets to receive your final output regarding the project. Who will prepare this report on the results of the evaluation?

3.4 Instructional System Design and Instructional System Development

In some literature, instructional system development is often used interchangeably as instructional system design. It is important to consider the two terms with a view of making a clearer understanding of the two terms. Instructional System Development is much more encompassing than Instructional System Design however the two terms are inseparable twins that always go together. The situation is such that one leads to another. Preceding any instructional system development is instructional system design. The design must be carefully worked out in form of a master plan which must be implemented before one could actually say it is workable or not.

The total process of designing, producing, evaluating and managing of instructions is what is known as Instructional System Development (ISD). An instructional system development could be regarded as a systematic approach to design, production, evaluation and utilization of complete systems of instruction, including all appropriate components and a management pattern for using them. It is larger than instructional product development, which is concerned with only isolated products, and is larger than instructional design, which is only one phase of instructional development. It is evident that instructional system design is just an aspect of an instructional system development but a very important aspect for that matter. Its importance lies on the fact that any mistakes made at this stage would be reflected in the entire process.

3.6 The Importance of Instructional System Design and Instructional System Development

Any teacher, any school, any institution interested in improving learning and/or performance, interested in moving from good to great, in meeting quality and productivity goals needs Instructional System Design and Development. Instructional system design and development have been

proved to be useful in that all variables whether external or internal that can hinder learning are always taken into consideration with a view to maximizing gains of instruction. Instructional system design and development pave way for a rather scientifically based instruction. Instruction is thereby designed in a step by step approach that would lead to the achievement of instructional objective. By designing and developing instructional packages the whole subject matter is presented in a logical and meaningful order in such a way that learning can be guaranteed. Since instructional system design and development use systematic approach, immediate feedback is guaranteed and revision of instructional procedures is equally assumed.

3.7 The Benefits of Instructional System Design

The main advantage of instructional systems design (ISD) is that it is a systematic decision-making process of finding a solution to an instructional problem. The ISD approach brings about innovations that can translate learning problems into instructional plans so that the quality of the instruction is assured. ISD focuses on achieving set learning outcomes and, therefore, the instructional objectives show all stakeholders (e.g., learners, learning facilitators, administrators, employers and parents) what the intentions of the learning materials are. Performance standards and assessment criteria provide a means of determining whether or not those outcomes have been met. Clients and users can thus trust the effectiveness of the instruction, because all aspects that would influence the design are considered and the final version of the learning materials has been revised and tried out until the learning outcomes are met.

4.0 CONCLUSION

It is clear that designing and developing instructional systems and process is a thorough and complex process aimed at solving particular instructional and learning problems. Instructional designers address three fundamental concerns, namely: *Goals:* What are the goals of the instruction? (*Where are we going?*) *Instructional strategy:* What is the instructional strategy and the instructional medium? (*How will we get there?*) *Evaluation:* How will we evaluate and revise the instructional materials for future improvement? (*How will we know when we have arrived?*)

5.0 SUMMARY

In this unit, we have considered instructional system design, which is an arrangement of resources and procedures to promote learning. It is also the systematic process of developing instructional systems while

instructional development is the process of implementing the system or plan. The acronym "ADDIE" represents each phase of the ISD process: Analysis, design, development, implementation, and evaluation: these are the production steps of training. The strengths of the ISD approach are its simplicity, reliability, self-adjusting mechanism, and applicability to a broad range of training and educational needs. Attempt was made to differentiate between instructional system development and instructional system design.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is instructional system design?
2. What is instructional system development?
3. Explain the phases of instructional system design (ISD).
4. What are the benefits of ISD?
5. What are the benefits of instructional system design and instructional system development?

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UNIT 3 STEPS IN INSTRUCTIONAL SYSTEM DESIGN

CONTENTS

1.0 INTRODUCTION

Instructors should have an appreciation of the fundamentals of instructional design. You might find yourself in a position where the instructional materials that you have been provided are not as well suited to your learners or you might find yourself in a position where you need to modify the materials to fit a specific audience. This unit will give you a basic knowledge of instructional design, and enable you to recognize and apply basic, effective instructional design methods.

2.0 Intended Learning Outcomes

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

- list the stages of instructional systems design
- state the goal of instructional system design
- discuss each of the stages of instructional systems design.

3.0 MAIN CONTENT

3.1 Steps of Instructional System Design

Instructional System Analysis provides a means for sound decision making to determine who, what, when, where, why, and how of training. The concept of a system approach to training is based on obtaining an overall view of the training process. It is characterized by an orderly process for gathering and analysing collective and individual performance requirements, and by the ability to respond to identified training needs. The application of a systems approach to training insures that training programmes and the required support materials are continually developed in an effective and efficient manner to match the variety of needs in an ever rapidly changing environment.

Instructional systems design is considered to be both a science and an art. It is Science because it is rooted in theories of learning and an art because the designing of instructional materials is a highly creative process (Moore, Bates & Grundling, 2002). ISD synthesizes instructional practice, research, and theory into a methodology for learning development that is systematic (inputs produce outputs which, in turn, become inputs) and systemic since the components have a symbiotic relationship (Smith & Ragan, 2004). The goal of instructional design is to create successful learning experiences and to engender transfer of training. ISD provides a road map to guide designers and instructors through analysis, design, development, implementation, and evaluation of the goal. The ISD road map (the science) provides a route to many different destinations depending on the turns (the art) one chooses to take. Moore, Bates and Grundling (2002) further attested that instructional design focuses on three fundamental concerns: identifying the goals; selecting the strategy; and, evaluating success.

The instructional process or teaching has traditionally involved instructors, learners, and textbooks. The content to be learned was contained in the text, and it was the instructor's responsibility to "teach" that content to the learners. Teaching could be interpreted as getting content from the text into the heads of learners in such a way that they could retrieve the information for a test. With this model, the way to improve instruction is to improve the instructor (i.e., to require the instructor to acquire more knowledge and to learn more methods for conveying it to learners). A more contemporary view of instruction is that it is a systematic process in which every component (i.e., teacher, learners, materials, and learning environment) is crucial to successful learning. This perspective is usually referred to as the systems point of view, and advocates of this position typically use the systems approach to design instruction.

3.1.1 Step 1 - Write the Instructional goal(s)

This is an overall statement the designer will write about what he or she expects the learner to be able to do at the end of the instruction. If the instructor says, "the learner will know how to perform a task", this only tells what he or she knows, not what he/she is capable of doing. The goal needs to state demonstrable actions (it is behaviour that we are after) using behavioural verbs of performing an action. As you refine your statements about what the learner will do, ask yourself "If someone was doing those actions, would you agree that they have achieved the learning goal?" Figure 3 depicts the Systematic Design of Instruction, illustrating the procedural steps on instructional process.

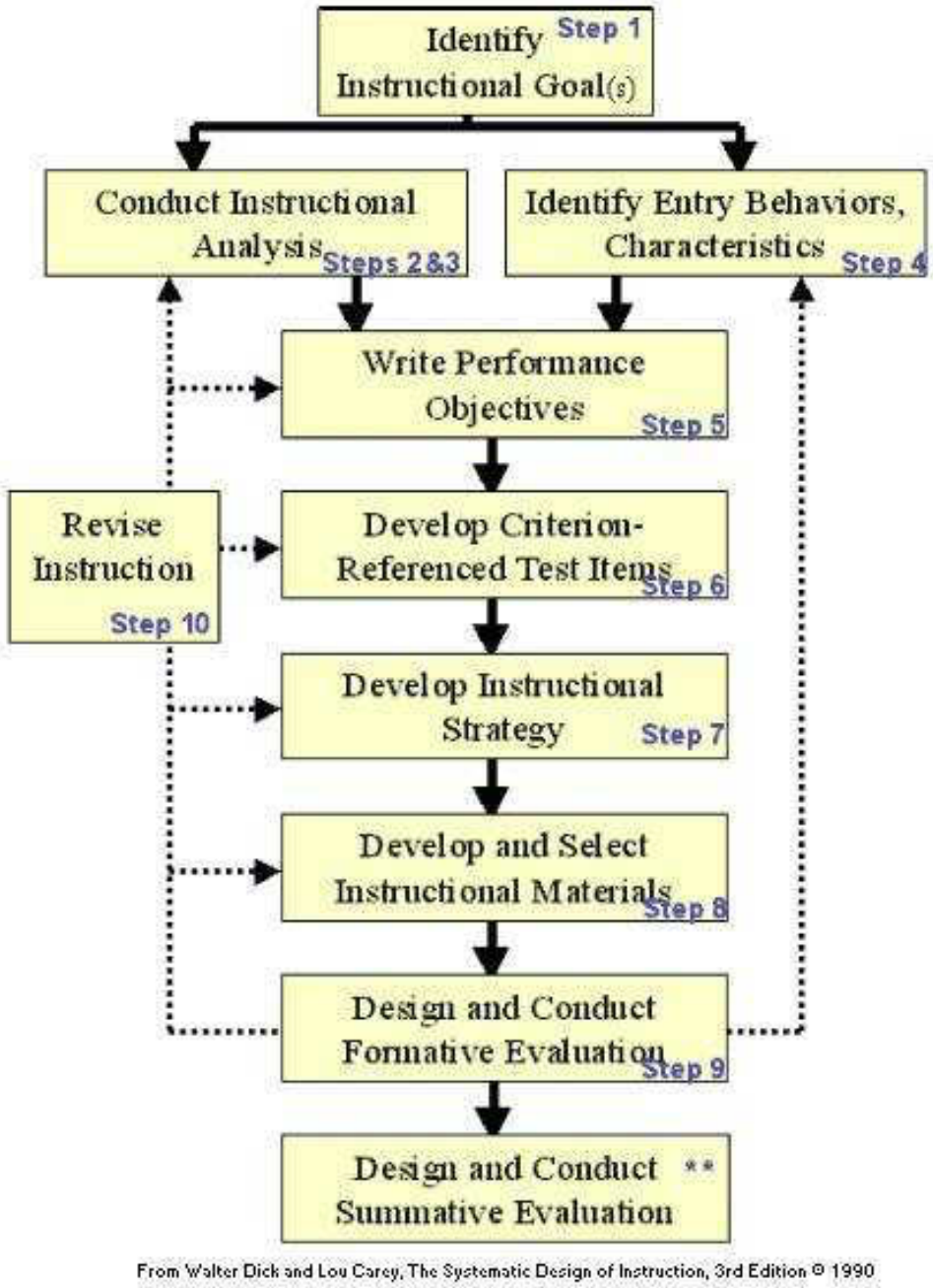


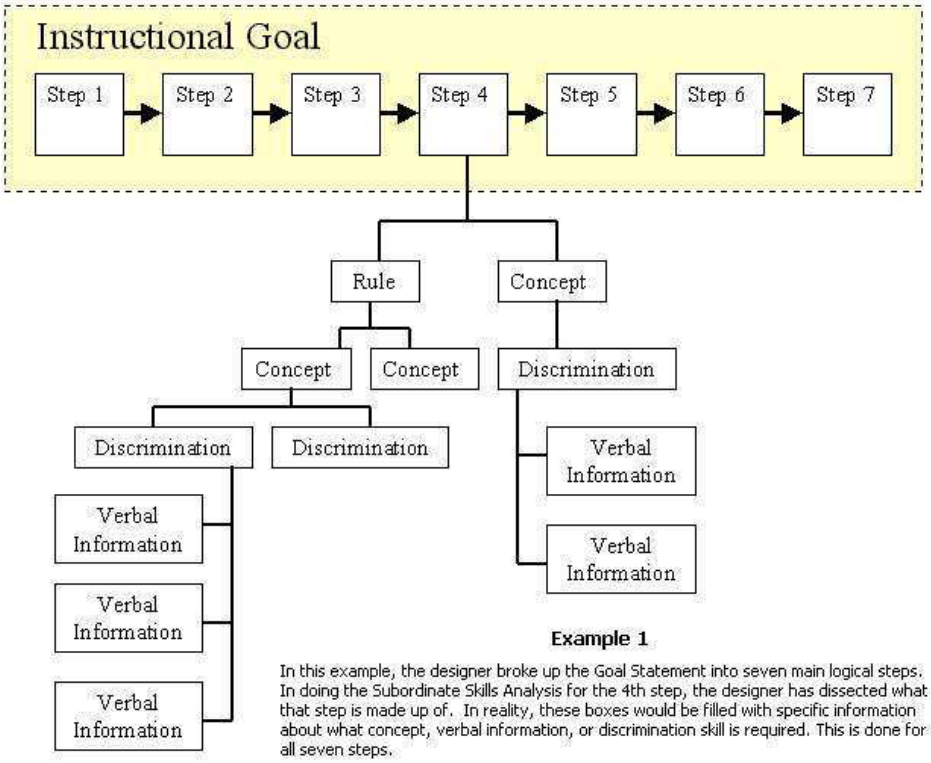
Fig. 3: The Systematic Design of Instruction
Source: Dick and Carrey (2005)

3.1.2 Step 2 - Goal Statement Analysis

What the designer does next is to classify the instructional goal either as a verbal skill, an intellectual skill, a psychomotor skill, or an attitudinal goal. By doing this, the designer will use different strategies in the design process. The designer may further breakdown the goal into 5 - 15 main steps to get a picture of the major elements it comprises.

3.1.3 Step 3 - Subordinate Skills Analysis

This task is where the designer spends many hours dissecting and breaking down the main steps into sub-skills. Each of the sub-skills required for each step will in turn be broken down into sub-skills needed for them. This backward stepping breakdown process is extremely important and continues until the designer comes to a set of very basic skills. You will do best if you completely remove the question, "How am I going to teach this?" At this phase of the design, you are a scientist, dissecting the performance of someone 'doing' the instructional goal. You will ask yourself, what sub-skills are necessary to perform this certain step without which it would be impossible to perform it. The product of this work will be a large hierarchical diagram displaying all the required sub-skills. Refer to example in Figure 4.



Example 1

In this example, the designer broke up the Goal Statement into seven main logical steps. In doing the Subordinate Skills Analysis for the 4th step, the designer has dissected what that step is made up of. In reality, these boxes would be filled with specific information about what concept, verbal information, or discrimination skill is required. This is done for all seven steps.

3.1.4 Step 4 - Identify Entry Behaviors and Characteristics

You now need to identify the learners' entry behaviors. That is, what is it that the learners are already capable of doing? Asking a few questions from individuals in your target group will certainly be better than relying on guesses or stereotypes. You will make horizontal dotted lines on your diagram which say, students will have to come to the instruction being able to perform all the skills up to this mark. That is, "My instruction will assume certain proficiencies and start from that skill set." Not only do you want to make sure that they are ready for the instruction, but you

must also determine if they already have some of the skills you have identified for instruction.

3.1.5 Step 5 - Write Performance Objectives

In this phase, you will go through each sub-skill box of your instructional analysis diagram and write a clear and precise statement about what behavior the learner will exhibit, under what conditions, and on what criteria it will be judged successful. Let's now ask the defining question, "Would someone be able to determine if the learner has indeed performed this skill?" The answer is clearly yes. These performance objectives are important statements about what demonstrable behavior the learner should be able to do to indicate that he or she 'knows' it.

3.1.6 Step 6 - Develop Criterion-Referenced Test Items

Here we create our test items. Why should we create content if we don't yet know what we will expect of the learners? Using the criteria created for each performance objective, you will create questions that would show whether or not the learner can perform the skill. The type of test item, be it multiple choice, fill in the blank, essay, or other, should be dictated by the verbiage of the performance objective. Questions, such as essay types will need special evaluation instruments such as a checklist to verify that each key element of the answer has been addressed. The most important thing a designer does in this phase is to create a number of clearly phrased questions that give the learner the opportunity to demonstrate that he or she can perform a given skill. Questions that trick confuse, or test skills other than that of the performance objective are useless.

3. 1. 7 Step 7 Develop Instructional Strategy

Based on information from the five preceding steps, identify the strategy that you will use in your instruction to achieve the terminal objective. The strategy will include sections on pre –instructional activities, presentation of information, practice and feedback, testing, and follow-through activities. The strategy will be based on current theories of learning and results of learning research, the characteristics of the medium that will be used to deliver the instruction, content to be taught, and the characteristics of the learners who will receive the instruction. These features are used to develop or select materials or to develop a strategy for interactive classroom instruction.

3.1.8 Step 8 - Develop Instructional Materials

Here, you finally get to develop (or programme) the materials. Because your instructional material will certainly be revised before final production, you should construct them on paper using text, sketches, and storyboards. The development should include a student manual, the instruction, tests, and an instructor's manual. Choices of multimedia should be made upon the congruence between the skill and the media type. Practice and feedback should be as close to the real-world situation as possible.

3.1.9 Step 9 - Conduct Formative Evaluation

Formative evaluation is the testing that takes place to help you smooth out your instruction.

Even with all of your tedious and careful analysis, planning, and reviewing, you have only created instruction that will theoretically work. It is now time to test these assumptions empirically. If done with the instructional design itself as a framework, you will be able to pinpoint the exact areas that will need the improvements. Ideally you will conduct three rounds of evaluation. First, with three to five students on a one-to-one basis, second, with eight to twenty randomly selected target students, and third, a field trial with about thirty students. Each of these evaluations will give you the different products you will need to re-evaluate all parts of your instructional intervention.

3.10 Step 10 - Revise Instruction Accordingly

This step is cycled with step 9 three times, once for each of the evaluation types. In this phase, you will revise the instruction itself or the procedures of how the instruction is used. Your summaries from the formative evaluation will include learners' remarks, scores on pretests, embedded tests, posttests, your attitude questionnaire, and your debriefing notes. Using tables that show both individual and group score results categorised by learning objectives, you should first analyse the inter-objective responses to find if there are problematic test items that need to be thrown out. The point is to focus on which objectives need revision. The designer will typically create a revision table that includes the instructional component, the problem encountered, the suggested change, and the evidence and source for the problem. Your revision could involve changing any of the many design steps up to this point.

4.0 CONCLUSION

Often times, instructional systems design process may be portrayed as linear. However, in practice, it is frequently iterative, moving backwards and forwards between the activities as the project develops. While ISD is intended to provide the external conditions for learning, the learning still remains the responsibility of the learner. In other words, the designer can select and arrange certain external conditions to assist in the internal learning process. The designer's function, therefore, is to plan the learning experiences that results in changing current behaviour, performance and cognition to some new, as yet unlearned, behavior and mental processing in order to achieve set learning outcomes.

5.0 SUMMARY

The ISD approach brings about innovations that can translate learning problems into instructional plans so that the quality of the instruction is assured. ISD focuses on achieving set learning outcomes and, therefore, the instructional objectives show all stakeholders (e.g., learners, learning facilitators, administrators, employers and parents) what the intentions of the learning materials are. Performance standards and assessment criteria provide a means of determining whether or not those outcomes have been met. Clients and users can thus trust the effectiveness of the instruction, because all aspects that would influence the design are considered and the final version of the learning materials has been revised and tried out until the learning outcomes are met.

6.0 TUTOR-MARKED ASSIGNMENT

1. List and explain the steps of instructional system design.
2. State the goals of instructional system design.
3. Choose a topic in your subject area and use the steps of Instructional System Design to develop an instruction.

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UNIT 4 TASK ANALYSIS AND THE TEACHER 1

CONTENTS

1.0 INTRODUCTION

The Analysis of Learning Task
Task analysis involves breaking a task down into functional behavioral units. Tasks are broken down into sub tasks. Subtasks are broken down into elements. Elements are broken down into steps. The amount of detail that is necessary in breaking down a task is dependent mainly on the prerequisite skills of the targeted learners. The general recommendation is that learners with lesser prerequisite skills will require a more finely detailed analysis with more steps. The complexity of a task analysis can range from a simple listing of steps to a detailed study of a job. It all depends on the particular situation. This analysis becomes the basis for writing performance objectives, performance measurements, sequencing instruction and other design decisions.

2.0 Intended Learning Outcomes

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

- define task analysis
- define sub-skills
- state the purpose of a task analysis.
- explain why a task analysis is important when designing instruction or learning environment.
- explain the three major components to task analysis
- do a task analysis

3.0 MAIN CONTENT

3.2 What is Task Analysis?

Task analysis is the analysis of how a task is accomplished, including a detailed description of both manual and mental activities, task and element durations, task frequency, task allocation. But Task analysis for instructional design is a process of analysing and articulating the kind of learning students are expected to know how to perform. Task analysis is the process of breaking a skill down into smaller, more manageable components. Once a **task analysis** is complete, it can be used to teach learners with ASD a skill that is too challenging to teach all at once.Following the determination that an instructional need exists (needs assessment), task analysis is used to analyze that need for the purpose of developing the instruction (Cooper, Heron & Heward, 2020; Pratt & Steward, 2020; Winston, 2020). The first step in the design of any instruction is a task analysis to determine what should be taught. Designing instruction for a course or topic must surely begin with an idea of the purpose of what is being designed. The greatest clarity in conception of the outcomes of instruction is achieved when human performances are described. The question initially asked by the teacher is not *what will students be studying*? but rather *what will students be doing after they have learned?* This means that design begins with a consideration of instructional objectives. The set of tasks, created for the student to meet a long-term goal or objective, is built on a hierarchy of steps. It moves from general to specific. The logical nature of task analysis allows instruction to follow a guideline or set of tasks with short term goals throughout the instructional plan. These smaller goals help the student achieve success and build confidence, as they work toward the long-term goal.

Why do designers perform task analysis?

Effective instruction to be achieved, there is a need to have a general and better comprehension of the task analysis functions is, which include:

- *Inventory tasks*: Identify or generate a list of the relevant tasks that should be considered for instructional development.
- *Select tasks for analysis*: Select certain feasible and appropriate tasks for training, since it is impossible to train every person on every task to a level of proficiency that might be required for the job.
- *Describe or decompose tasks*: Identify and describe the components of the tasks, goals, or objectives identified in the inventory.

- *Sequence task components*: List task component in an understandable chronological order.
- *Classify learning outcomes*: Classify performance and knowledge states required of students by the kind of learning outcome required.

Cooper, Heron and Heward (2020) and Winston (2020) further buttressed that instructional designers perform task analysis in order to determine:

- the goals and objectives of learning;
- the operational components of jobs, skills, learning goals or objectives, that is, to describe what task performers do, how they perform a task or apply a skill and how they think before, during, and after learning;
- what knowledge states (declarative, structural, and procedural knowledge) characterize a job or task;
- which tasks, skills, or goals ought to be taught, that is, how to select learning outcomes that are appropriate for instructional development;
- which tasks are most important-which have priority for a commitment of training resources;
- how to select or design instructional activities, strategies, and techniques to foster learning;
- how to select appropriate media and learning environments; and
- how to construct performance assessments and evaluation.

3.2 Major components of task analysis

There are three major components of task analysis viz: method, content and process.

Method: refers to the way in which a task is to be performed. For a particular task, a subjective decision is made by the task analyst as to which method; of the methods available is the best to use for a particular set of students.

Content: refers to the steps into which the method is divided. Each step is numbered and described in detail. The number of steps in a content task analysis will vary depending on the needs of the individual student. The detailed description of the steps in the content task analysis is intended to provide each person who will be working with the student with a clear understanding of the steps involved in completion of the task. It is not meant to be used as a set of verbal instructions to be given to the student during the teaching process.

Process refers to the teaching strategies which will be utilized to teach the content. The process includes information on not only the format or method of presentation, but also on the feedback which will be given to assist the student in learning the skill, as well as the types of reinforcers and schedule of reinforcement which will be given to provide motivation for learning.

3.3 The teacher in the process of task analysis

Teaching is one of the most complex human endeavours imaginable. Teachers arrange content information around an organizing idea, determine appropriateness of available resources, and make judgment about the people involved. Generally, teachers formulate the instructional plan, they not only consider the necessary skills to be taught to reach the long-term goal, but they must also incorporate quantifiable methods for measuring student achievement. Task analysis requires teachers to create logical and concrete ways to measure a student's success at each point in the instructional plan. If a student has not performed well on the evaluation or mastered the skill, then further practice is required until the student masters the specific skill or sub-skill.

Sub-skills are smaller skills to help students reach short term goals. Students are not measured against the performance of other students, but on their ability to meet the tasks created for them. The assessments are based on whether or not the student can perform the skill. Continuous evaluation allows the teacher to measure student progress in a precise manner and on a daily basis. With the individualized nature of task analysis, each child is permitted to practice a skill at his or her own rate until mastery occurs. Mastery is reached when a student's response is accurate and timely. Although the instructional plan and the evaluation process are very specific and task oriented, teacher involvement is an essential part of the approach. The teacher creates the sequenced instructional plan based on expertise, experience, and interaction with the student. He or she decides which tasks are essential for the student to achieve the long and short term goals, and the necessary proficiency level.

Teachers, utilising a task analysis approach, incorporate certain techniques in their programmed sequence of lessons, such as motivational factors to inspire and maintain a student's attention, and clearly presented tasks for a student to complete. They also offer opportunities for student participation, and provide teacher feedback to the student. Reaching a mastery level for any set of skills or tasks is aided by a teacher's positive influence on a student through incentives,

rewards, positive reinforcement etc. Verbal praise and academic success are major motivators. An organized and precise instructional plan coupled with a dedicated teacher results in student success.

The task analysis approach is geared toward individualised instruction and continuous assessment. In the area of reading, the approach is used to remedy difficulties through small, logical steps leading to a general goal. Many students feel defeated when they are unable to achieve success in the classroom. By conquering smaller tasks, a student gains confidence in his or her ability. Constant evaluation with each sub-skill, keeps the teacher abreast on student progress. Mastering each sequenced step provides a solid foundation for the overall instructional goal. The task analysis approach is utilised as a logic-based remediation method to improve teaching and learning as well as provide tools for student success.

Description of Task Selection Criteria

The items listed hereunder explain the task selection criteria for instructional purpose:

- *Criticality*: how important is the performance of the task to the goals/mission of the organisation, or how critical is the risk of failure to adequately perform the task in its application context?
- *Universality/frequency*: how widely and commonly is the task performed in its application context?
- *Standardisation*: is the task similarly performed in all application contexts within the organization?
- *Feasibility: i*s support available for the task to be learned? Will support be available for the application context?
- *Difficulty: h*ow difficult is it to learn to perform the task?

4.0 CONCLUSION

Task Analysis is an essential part of any instructional design process in designing instruction or learning environments. Understanding and articulating the ways learners need to think or perform, is essential to designing effective instruction in the learning environment. Often times, instruction fails to support learning because the instructional designers fail to perform a competent task analysis, resigning themselves to redundant, inappropriate, reproductive forms of instruction that do not support the kind of learning that the designers had really intended but were unable to analyze and articulate.

5.0 SUMMARY

Planning for teaching by task analysis requires the teacher to identify all of the skills required for completion of a specific task. The teacher must break the task down into small teachable steps, determine the prerequisite skills or entry behaviours the student should have prior to learning task, design the specific teaching strategies and procedures needed for the learner to acquire the task and determine what level of reinforcement will be provided during the teaching process.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is task analysis?
2. List six reasons for performing task analysis.
3. Define sub-skills.
4. Explain the three major components to task analysis.

7.0 REFERENCES/FURTHER READING

Cooper, J. O., Heron, T. E, & Heward, W.L. (2020). *Applied Behavior Analysis* (3rd ed.). Pearson Education, Inc.

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UNIT 5 TASK ANALYSIS AND THE TEACHER 2

CONTENTS

1.0 INTRODUCTION

Designing instruction for a course or topic must surely begin with an idea of the purpose of what is being designed. The greatest clarity in conception of the outcomes of instruction is achieved when human performances are described. The question initially asked by the designer is not, what will students be studying? Rather, what will students be doing after they have learned? This means that design begins with a consideration of instructional objectives. The ordering of this unit reflects an important fact about the procedure of instructional design. It also introduces you to performance task and learning task as an aspect of task analysis.

2.0 INTENDED LEARNING OUTCOMES

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

- Differentiate between performance task and learning task.
- Identify the actual learning tasks.
- Explain strategies to analyse and formulate the learning task.

3.0 MAIN CONTENT

3.1 The Analysis of Learning Task

Once the specific performance expected of the learner has been identified, the teacher can consider what he has to learn in order to be

able to perform successfully. The next step is for the system designer to analyse and formulate the learning tasks. The analysis and formulation of learning tasks is a procedure having a structure specific to it and it is composed of a set of strategies (as shown in Figure 10).

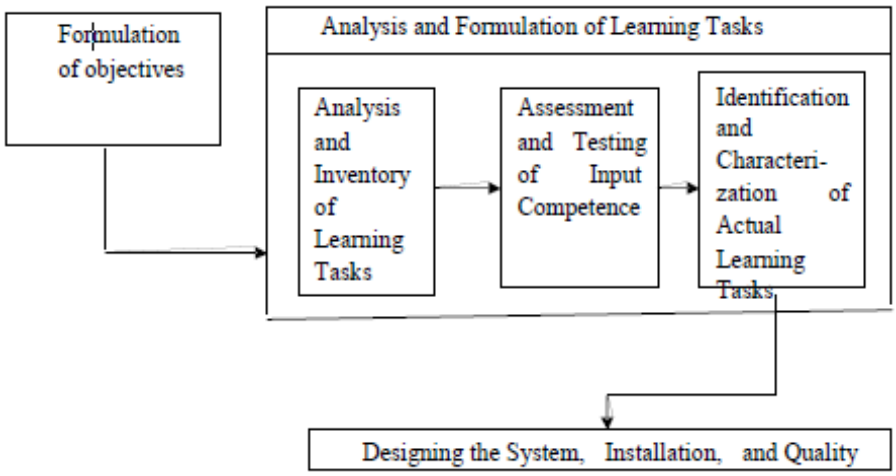

Fig. 10: The Analysis and Formulation of Learning Tasks

3.1 The Analysis and Inventory of Learning Tasks

If it is known from a statement of objectives the particular terminal performance expected of a student, we must then ask ourselves what the student has to learn so that he/she can perform in the expected way. In other words, we must determine the human capabilities skills, knowledge, and attitudes that the individual needs to have in order to carry out the specified output performance.

3.2 Learning Task and Performance Task

It is important that we understand the difference between performance tasks and learning tasks. Performance tasks, as described in a statement of objectives, communicate to us behavior which the product of the system is expected to be able to exhibit at the output point. Learning tasks and their analysis identify whatever learning is to be undertaken by the learner to enable him to demonstrate the performance described. The need to conduct an analysis of learning tasks is questioned by some. If an objective is stated specifically enough doesn't it inform us as to what has to be learned? If the expected performance is described on behavioral terms, doesn't it also describe the learning task? The answer to these questions is not necessarily negative. It may well be that for certain categories of behavior; a description of output performance may also identify the learning tasks. This could be the case when the process of the acquisition of certain behavior falls into such categories as

response and chain learning. More specifically, whenever the attainment of a performance task requires only imitative behavior, we can say with some confidence that a statement of the task may also imply the learning task.

Most of the performance we want to facilitate in school however, is within the cognitive and affective, sometimes psychomotor domains. Some of the types of learning involved here are

- multiple discrimination,
- perception and use of concepts and principles,
- problem solving, and
- decision making.

A description of performance expectation in these domains will rarely, if ever, suffice as identification of learning tasks. Although it may be implied, a learning task is not explicit in a statement of performance. It must be uncovered, deduced by an examination and analysis of the task itself.

3.3 Examples of Analysis of Learning Tasks

The following examples demonstrate the analysis of learning tasks.
The learner will be able to perform such tasks as:

- Answering questions in reference to concrete phenomena immediately observable in the environment,
- Asking questions about the same,
- Describing a picture or object,
- Describing his actions or the actions of those around him,
- Repeating a short story he has just heard, and
- Engaging in a conversation about events in which he has been involved.

An analysis of learning tasks commences by considering what has to be learned by the student so that he will be able to communicate in the situations described and with the accuracy specified. The learning task, of course, is not to memorize utterances that may be used in communication events under the circumstances described in the objective. Underlying even a brief utterance is a complex set of patterns operating in the various psychomotor, cognitive, and effective domains of communication behavior.

The learning task in foreign language acquisition is to learn to perceive and use these patterns and, thus, to learn to generate novel utterances

appropriate to the specific referential, situational, and cultural contexts in which the individual participates. Only a scientific analysis of the subject language and cultural will be able to uncover all these patterns emerging from such analysis would suggest the establishment of the different categories of an inventory of learning tasks. One of these categories could cover sound features, intonation, and stress patterns. Another one could list sentence patterns the learner has to be able to use in order to speak in the manner implied by the objective.

The designer should include in the inventory specific paralanguage features and kinesics. Furthermore, the analysis must identify typical situations that are representative of the circumstances indicated in the statement of objectives and in the description of performance tasks. The analysis must also refer to categories of vocabulary that are related to the specified situations. The items uncovered in the task analysis can be listed and arranged in an inventory. The information in this inventory will then serve as input data in the design and development of the system.

The next example concerns the analysis and inventory of learning tasks on the pre-primary levels. The project conducted at the Pacific Grove, California, School System in 1967 attempted to develop a guidance subsystem for parents of children entering kindergarten. The purpose of this subsystem was to assist parents to prepare their child for his new public-school experience. Of the numerous areas of development, social interaction was explored in depth. A whole set of objectives was formulated of which only one will be presented here as an example.

In a kindergarten class, under the direction of the teacher, having heard a recorded story at a listening post, a child within a group of six to eight children will participate in discussing a story with his peers. **Expectation:** Within a four-week period, an increase of frequency of verbalization will be considered growth. This objective was subjected to an analysis. The outcome of the analysis as reported here is not inclusive at all. It gives only hints of the types of learning tasks that a complete analysis would eventually uncover.

It is obvious that the child has to learn to converse on a given topic. But what does the child have to learn specifically in order to be able to do this?

The analysis suggests that he has to learn to:

- Comprehend what has been communicated to him; to grasp significant elements and relationships,

- Recall the story, its significant elements and relationships; recall events in chronological order, and
- Organize his verbal account of the story with authenticity (significant elements, relationships, order, and so on).

In order to do these things, he also has to learn to use patterns of language commonly used in the classroom and words within their common range of meaning. In addition, the child must learn to:

- Understand that there are activities in which he is expected to participate,
- Pay attention to what is being said,
- Respond to certain verbal and nonverbal cues, and
- Wait for his turn.

This analysis demonstrates that a description of expected output behavior is only a basis for an analysis of learning tasks and it is not in itself a description of them. As a result of an inquiry of what has to be learned in order for the learner to be able to behave in the way described in the performance tasks, an inventory of learning tasks can be formulated. This inventory, however, will contain-most likely more than what actually has to be learned.

3.5 **Input Competence**

In most occasions, we will find that the learner brings to the learning situation some skills, information, attitudes, and so on, that are relevant to what he is supposed to learn. It would be a waste of time to teach competences on what the learner has already possesses. We usually refer to competences that are relevant as the initial or input capabilities of the learner. It is the job of the system designer to assess the capabilities the student has already acquired relative to the learning inventory. This assessment is pertinent even in a case where the learner acquire some esoteric knowledge, such as a foreign language he has never heard of. The learner of the foreign language will have at his disposal at the input point features of his/her native language that is transferable into the target language.

3.5 Input Test

By using an input test, the teacher can determine what a student had known previously about a subject. The variations in their entry behaviour or previous knowledge may vary from one student to another based on their exposure to information and environment. Hence, considering this variation is of paramount importance. If a teacher does not pay attention to individual differences in input capabilities, such is inviting trouble of less concentration which may impede students'

change in entry behavior after the lesson. The learner who has not acquired the capabilities may be frustrated and will probably lose interest. A test of input capabilities will help to avoid both pitfalls. It will make it possible to provide a pre-input program to overcome deficiencies in some students and to arrange for the advanced placement of others.

3.6 The Identification and Characterisation of Learning Tasks

It has already been mentioned that in most cases we will find that the learner has already acquired capabilities that are relevant to a particular set of learning tasks. The way to identify the actual task of learning is to screen out what is known to the learner (input competence) from a specific set of learning tasks (inventory of learning tasks). Figure 6 shows the analysis of computation on the actual learning tasks.

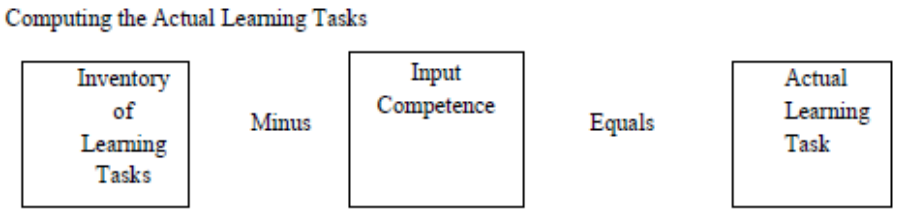

Fig. 6: Computation on the Actual Learning Tasks

For example, in learning to tell time in a foreign language, we will list in the inventory of learning tasks, the ability to properly identify numbers as represented by the figures from 1 to 12. It will be expected, however, that this capability will be possessed by the child as an input competence. This capability, therefore, will not be identified as an actual learning task. The characterization of learning tasks provides additional information about learning tasks. This information will be used as input data for the design of the system.

There are two ways that this characterization can be accomplished. One of such is to specify the type of learning which a particular learning task represents. Khadjooi, Rostami, & Ishaq, (2011) identifies a whole set of learning types as thus:

- signal learning,
- response learning,
- motor and verbal chains,
- multiple discrimination,
- concept learning,
- principle learning, and

- problem solving.

These types of learning differ significantly based on particular conditions which need to prevail in order to ensure mastering of learning tasks for different types. For example, producing a new foreign language sound is identified as response learning, learning of copying a sound. The conditions governing this learning are different from learning the use of a new sentence structure termed principle learning. The use of a grammatical structure cannot be learned by copying or memorizing sentences in which the structure occurs. The identification of the type of learning a learning task represents is indeed most useful information. This identification is one of the bases upon which to select and organize learning content and learning experiences. This information is needed for two purposes. Firstly, it can be used to project the time needed to curdle a learning task, and secondly, it guides in making an estimate of the amount of needed content for the treatment of any particular learning task.

3.3 Review of Strategies and Examination of the Nature of Tasks

The analysis and formulation of learning tasks lead the system designer to a point where he can clearly state what has to be learned in the system in general and by specific students in particular. The information in Figure 7 provides briefly the analysis and formulation of learning tasks and reviews on the strategies involved in the process.

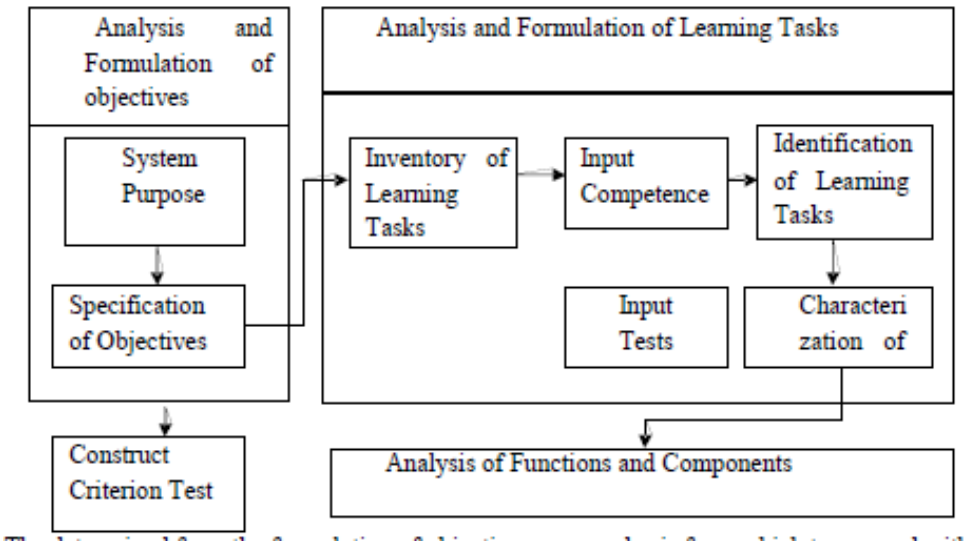

Fig. 7: Strategies of Analysis of Learning Tasks

As shown in Figure 7, the data gained from the formulation of objectives serve as basis from which to proceed with a query of what has to be learned in order to attain the objectives of the system. As a result of this

inquiry, an inventory of learning tasks is evolved. This inventory is then subjected to further analysis. In most cases we find that the learner has previously acquired some of the tasks listed in the inventory minus relevant input competence. Once the designer has identified the actual learning tasks, he must characterise them as to the type of learning they represent and as to the degree of difficulty they pose for the learner.

The nature of the processes employed during the strategies described hitherto is primarily analysis, but some other time it might be synthesis. To begin with, an analysis of systems, purposes leads to gathering of data through which further analysis will be conducted in facilitating the development of statement of objectives. The objectives must then be further analyzed in order to identify whatever the learner has to learn in order for him/her to behave in a prescribed way. This type of analysis provides the learning inventory.

To assess input competence, a test relevant to the learning inventory versus input competence furnishes a set of actual learning tasks that can be characterized as to the kind of learning they represent and the degree of difficulty they pose on the learner. It should be noted that the integrated use of analysis and synthesis appears to be a major characteristic of these strategies.

4.0 CONCLUSION

In order to design instruction that will support learning, it is essential that we understand the nature of the tasks that learners will be performing. This is true whether you are designing traditional, direct-instruction or problem-based constructivist learning environments. If you are unable to articulate the ways that you want learners to think and act, how can you believe that you can design instruction that will help them?

5.0 SUMMARY

Task analysis refers to several different, though interrelated, procedures which are carried out to yield the systematic information needed to plan and specify the conditions for instruction. The three procedures described in this unit are (1) analysis and inventory of learning tasks; (2) assessment and testing of input competence and (3) identification and characterization of actual learning tasks. All three types of analysis begin with target objectives for lessons or courses.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is the difference between performance task and learning task?
2. With examples define Analysis of learning tasks.
3. Explain the following:
   a) Initial or input competence
   b) Input test.
4. Describe how do you identify the actual learning task?

7.0 REFERENCES/FURTHER READING

Cooper, J. O., Heron, T. E, & Heward, W.L. (2020). *Applied Behaviour Analysis* (3rd ed.). Pearson Education, Inc.

Pratt, C. & Steward, L. (2020). *Applied Behavior Analysis: The Role of Task Analysis and Chaining*. https://www.iidc.indiana.edu/irca/articles/applied-behavior-analysis.html.

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MODULE 2 SYSTEMS APPROACH AND FUNDAMENTALS OF APPLICATION OF SYSTEMS TO INSTRUCTIONS

UNIT 1 GENERAL OVERVIEW OF SYSTEMS

CONTENTS

1.0 INTRODUCTION

System is a term that has been variously conceptualized and defined by various authors. In this unit we are going to take a critical look at systems, various definitions of systems by various authors. Also, attributes of systems as well as different types of systems would be considered.

2.0 INTENDED LEARNING OUTCOMES

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

- define system
- mention the characteristics of system
- explain the types of system
- examine instructional systems

3.1 General Overview of Systems

Oxford Advanced Learner's Dictionary, Sixth Edition, refers system as a group of things or parts working together and connected in some ways to form a whole. System is the sum total of separate parts working independently and in interaction to achieve previously specified objectives. This connotes that a system is an object or event made up of parts that are cooperatively working together, mutually independent and functionally related for a predetermined purpose. Adeoye (2015) sees a system as an assembly of interacting elements working independently and in interaction with one another to achieve common objectives. A system can be perceived by as a method or procedure e.g. system of coping with stress in an environment. Others see it as a set of principles or rules linked in an orderly way to show a logical plan e.g. administrative system. From afore enumerated definition and descriptions, the words "systems approach" simply mean an orderly approach for solving problems - a structured process based on a study of all the variables related to a problem. Since the teaching-learning operation is a problem, it should lend itself to an orderly solution process.

3.2 Terminologies Related to Systems Concept

(i) **Input:** This is a collective term which refers to everything that the system receives from its environment for its sustenance. These include persons, energy, finance, information etc.

(ii) **Output:** This is another collective term which refers to whatever the system sends back into the environment. It is this output which enables the system to meet the expectations, requirements, and demands of its environment. In a nut-shell, output represents systems product.

(iii) **Throughput:** This is the process component of a system. This is illustrated below:

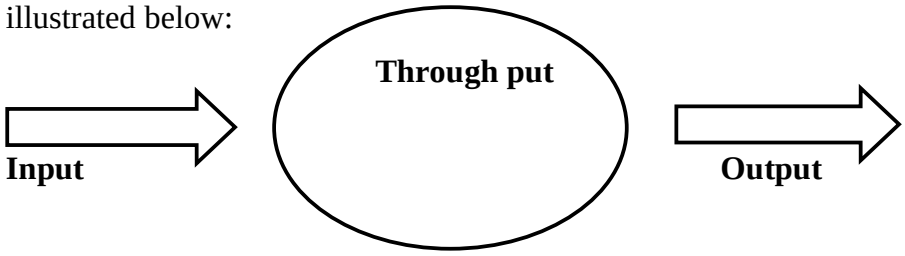

Fig. 7a: Input - Through put – Output System

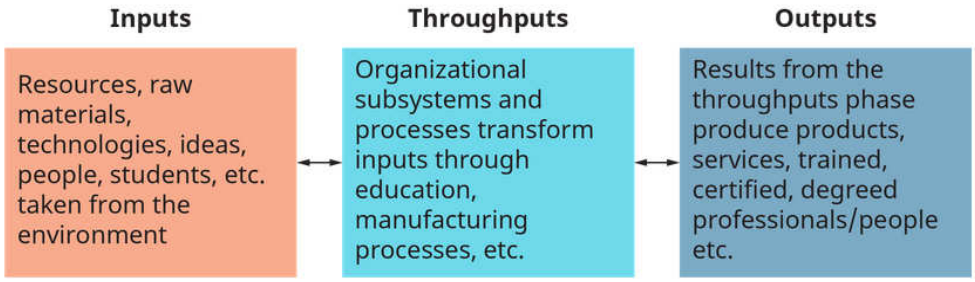

Fig 7b: Input - Through put – Output System

Figure 7a and 7b illustrates theory's view of organizations as open systems that take in resources and raw materials at the "input" phase from the environment in a number of forms, depending on the nature of the organization, industry, and its business. Whatever the input resources are—information, raw materials, and students entering a university - to be transformed by the internal processes of the organization. The internal organizational systems then process and transform the input material, which is called "through-put" phase, and move the changed material (resources) to the "outputs" and back into the environment as products, services, graduates, etc.

(iv) **Sub-system:** This refers to a component, element or segment of a system, e.g. if an atom is considered as a system, the sub-systems include proton, neutron and electron.

(v) **Supra-system:** This refers to the bigger system which surrounds the system. In other words, it is the outer environment from where the system obtains information, energy or other means of sustenance.

3.3 Attributes of Systems

The enumerated points are the related attributes of a working system achieve a purpose:

a. A system is assumed to be surrounded by an environment otherwise known as the supra-system. The system also releases the products of its internal processes in this same environment.

b. A system is made up different parts which are related to the other. These parts work together for the over-all wellbeing of the whole. These parts are known as the sub-systems.

c. Every system is organized to achieve a goal. No system exists without a goal. This means that each system is goal-serving or value-laden.

d. The parts of a system are interdependent and functionally related. This means that the parts work cooperatively to achieve previously specified goal or objective.

e. Systems could be natural, artificial or both at once. Examples of natural systems include Solar system, Ecosystem and Body system. Example of artificial (man-made) systems include Computer systems, Highway system. Examples of natural-cum-man-made system include Hydro-electric power system, water supply system.
f. Each system has its own boundary which can be closed or open. However, most systems are open and they continuously interact with other systems within the supra-system.
g. System is relative. What somebody considers as a system may be seen as a sub-system by another or same person at different times depending on the perspective from which it is being examined.
h. Systems are multidimensional. Whilst a system could be as large and complex as the entire universe, another system could be as small as an atom.

3.4 Types of Systems

Open and Closed Systems: A system is closed if the boundaries are sealed off from the environment in such a way to forestall interaction between the system and its environment. A system is open if its boundaries have breaks which enable the system to interact with its environment. The bigger the breaks, the more open the system and the more inputs it has to cope with. For practical purposes, one cannot speak of completely closed or completely open systems, either closeness or openness are matters of degrees. The more varied and complex the inputs are, the more complex the system and its input will be. The less varied the input, then, the less varied the output and the more closed the system is.

Simple and Complex Systems: The main determinant of simplicity or complexity of a system is the input. The more varied or complex the input is, the more complex the system and its output. Conversely speaking, the less varied the input, the less varied the output shall be.
Macro and Micro Systems: These two words - macro (large) and micro (small) are relative.

Macro systems are more complex than the micro systems. Nigerian educational system at the federal level can be described as macro while at the state or local level is micro.

Deterministic and Probabilistic Systems: Deterministic systems are sometimes referred to as mechanistic systems. Their behaviour can be determined precisely with high degree of certainty or precision. An example is the electrical system whose behaviour can be predicted with high degree of certainty as opposed to probabilistic system. Probabilistic

systems are the opposite of deterministic systems. Systems that include human beings fall into this category, for example the cultural system of a community. To a large extent the behaviour of such a system is probabilistic because human behaviour may not be predictable at most times.

Physical and Non-Physical Systems: Physical systems are concrete and observable while the non-physical ones are conceptual (theoretical) i.e. process or methodological approach.

Dynamic and Static Systems: In static systems, there is a state of equilibrium, but in dynamic systems, there is a shift from a state of equilibrium to a steady state. When the opposing states in a system are in balance, the system is in a state of equilibrium. A steady state represents the notion for maintaining the orderliness of the system in the face of energy or information stress.

3.5 Educational System

In the educational system, there are a lot of sub-systems that makes up the system. Among the sub-systems that make up the educational system are institution sub-system, evaluation sub-system, instructional sub-system, management sub-system etc. Below is a diagram showing educational system as well as the sub-systems within the educational system.

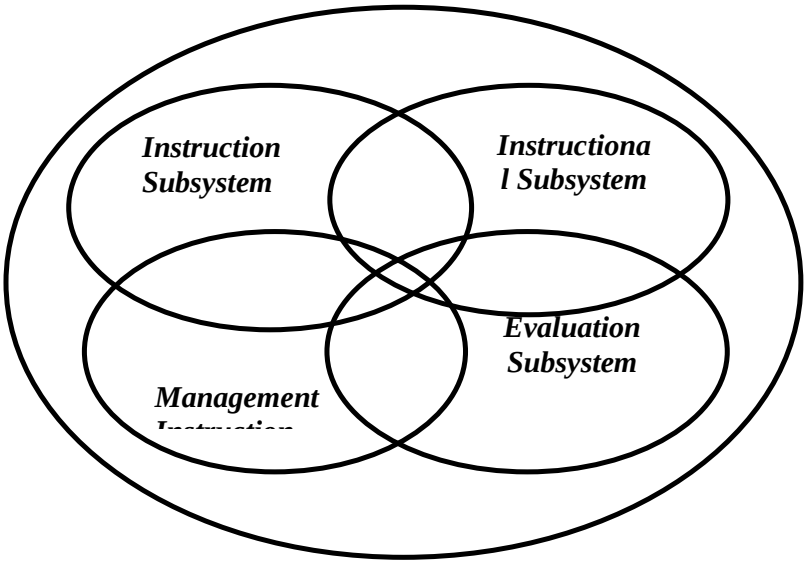

Fig. 8: Educational System

3.6 Instructional System

In the instructional system, there are lots of subsystems that make up the system. Among them are content subsystem, media subsystem, evaluation subsystem, learner subsystem, teacher subsystem, method subsystem etc. Figure 9 shows instructional system as well as the subsystems therein.

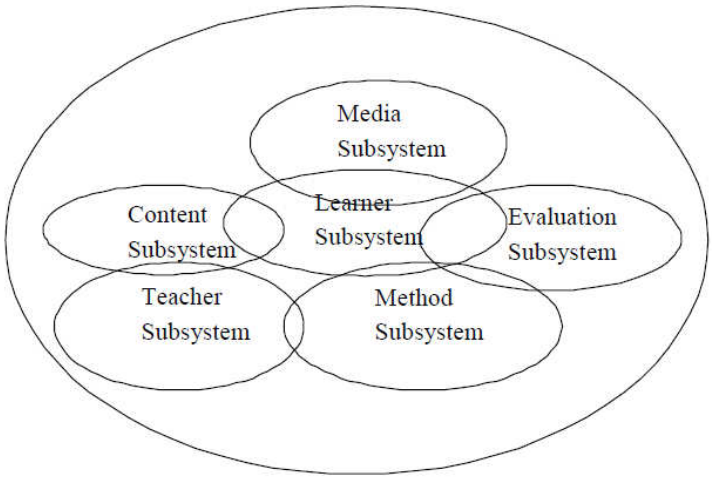

Fig. 9: Instructional System

4.0 CONCLUSION

In this unit, we examined various definitions of system by different authors; we also examined some of the attributes of systems. We also discussed the types of systems and took a look at educational system as well as instructional system,

5.0 SUMMARY

A system is a group of parts or elements working together independently, cooperatively and interactively as a whole so as to achieve specific goals or objectives. A system is more than the sum total of its parts. A system is assumed to be surrounded by an environment otherwise known as a supra-system. A system is made up of different parts which are related to the other. System is relative. System can be classified into: natural, artificial, and natural-cum-man-made systems.
Systems can further be classified as closed versus open system; simple versus complex systems; macro versus micro system; physical versus non-physical system; deterministic versus probabilistic system; dynamic versus static system (Ibrahim, 2015; Asuquo & Chucktu (2016).

6.0 TUTOR-MARKED ASSIGNMENT

- What is a system?
- Examine the characteristics and types of systems.
- By means of diagram only, illustrate the educational system and instructional system.

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*. Ibadan, Nigeria: His Lineage Publishers House.

Dick, W., Carey, L., & Carey, J. O. (2005). *The Systematic Design of Instruction.* Pearson, New York.

Fauser, M. Henry, D. & Norman, L. (2006). *Comparison of Alternative Instructional Design Mode*l. Hoboken, NJ: John Wiley & Son, Inc.

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UNIT 2 SYSTEMS APPROACH

CONTENTS

1.0 INTRODUCTION

The systems approach is used to describe how the different elements interact/co-operate to achieve a desired goal. Systems approach is a technique for making explicit the structure and organization of an ordered whole by laying bare its elements and showing the interrelationship between them. Systems approach helps to reveal omissions, redundancies, inconsistencies both in structure and relation among the elements of a system and thus helps to eliminate wasted efforts.

2.0 INTENDED LEARNING OUTCOMES

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

- explain the concept of systems approach
- discuss the historical back ground of system approach
- explain the steps in systems approach

3.1 Historical Background of Systems Approach

The systems' thinking has a long history traceable to the philosophical writings of Leibniz, Nicholas of Cusa, Marx and Hegel. In the field of psychology, Kholer s gestalt model of insightful learning bears striking semblance to system s model. According to Pratt and Steward (2020) the development of systems approach could be attributed to the advances in several disciplines such as Economics, Biomathematics, Physiology, Cybernetics and History of Science. Thus, one would expect a number of approaches different in style and aims comprising systems approach.

Historically, systems thinking represent a shift from earlier analytical procedures characteristics of science to a more integrated holistic approach.

The real application of systems theory to design began in the military during the World War II. To be precise, it was borne in the field of engineering where it was applied to the design of electronic, mechanical, military and space systems. During the process, it got involved with man-machine systems. Thereafter it was introduced to the industries, factories and business organisations for a number of reasons: (a) to maximize profit (b) to increase output/productivity, and (c) to enhance efficient and effective management of human and material resources. Examples of system s application abound in such industries as shipping, automobile banking and insurance, textile and government services such as postal agency, transportation, electricity supply and other infrastructures. By the late 1950s and early 1960s, systems approach began to be used in training and education. Systems approach has been increasingly used in solving educational/instructional problems. The application of systems approach has made it possible to see education as whole consisting of several interdependent elements which are working in harmony to achieve common objectives.

3.2 Steps in System Approach

Basically, systems approach comprises of two major parts (i) system analysis and (ii) system synthesis. System analysis is a process whereby a given a problem is broken down into bits It is at this stage that the actual problem is identified and analyzed with a view of setting goals and objectives. According to Pratt and Steward (2020), systems analysis consists of mission analysis, functional analysis, task analysis and consideration for methods and means.

3.2.1 Mission Analysis

This refers to the determination of the end product of the system analysis. It includes the various steps of identifying an overall mission objectives and the specific measurable performance requirements for the satisfaction of the mission. The mission is what has to be accomplished, or what is required

3.2.2 Functional Analysis

As is expected, it is closely related to mission analysis. It consists of breaking down of functions earlier identified under mission analysis with a view of grouping them into various components that would make for a functional mission profile. Functional analysis tries to leave out

impossibilities and concentrate on possible options. Since functional analysis centres on specific rather than general, it naturally leads to task analysis.

3.2.3 Task Analysis

It is concerned with the determination of the sub-skills that are required to learn an identified task. The task has to be analyzed to actually identify the best strategy that could be implemented to accomplish the objective.

3.2.4 Methods

Method has to do with methodical analysis of the systems. This step is important because at every stage of system analysis, there is need to consider alternatives that are considered best in terms of speed and accuracy in the attainment of the set objectives. In practice, the methods-means analysis may begin at any point in the system analysis procedure and thus may be continually refined as more detailed performance requirements are identified. In the system synthesis available data from system analysis stage are utilized to select solution strategies, implementing solution strategies and the evaluation of the total system in the environment for which they were designed.

The system approach can be summarized in a model:

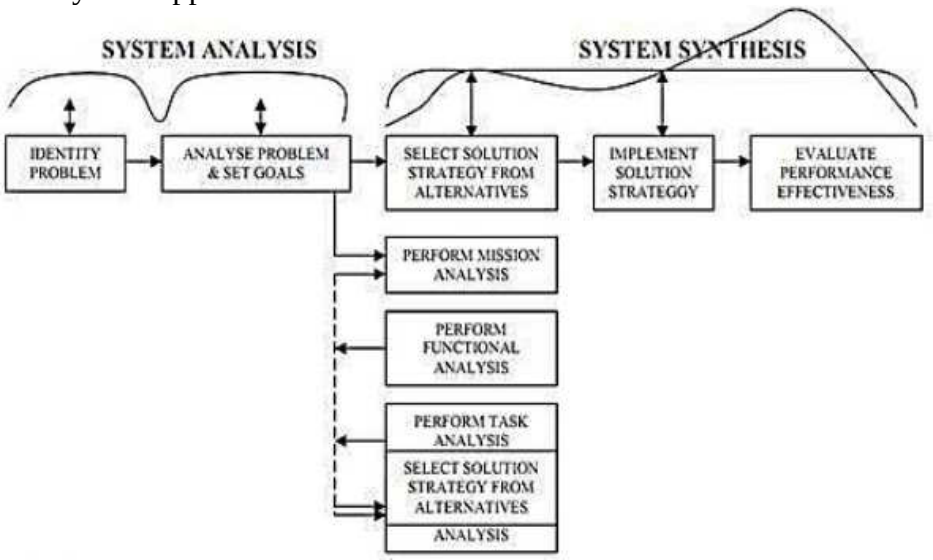

Fig 11: Steps in Systems Approach to Education
Source: Cooper, Heron & Heward (2020)

4.0 CONCLUSION

In this unit, we have examined the historical background of systems approach. We also examined the two major parts of systems approach which led us to the steps in systems approach.

5.0 SUMMARY

Systems approach as a concept was developed during the Second World War. To be precise it was borne in the field of engineering where it was applied to the development of electronic, mechanical, military and space systems. Broadly speaking, systems approach comprises of two major parts (i) system analysis, and (ii) system synthesis. System analysis consists of mission analysis, functional analysis, task analysis and methods-means analysis. System synthesis on the other hand consists of selection of solution strategy, implementation of solution strategy and evaluation of the total system.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is systems approach?
2. Briefly describe the historical background of systems approach**.**
3. With the aid of diagram, explain the steps in systems approach.

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*. Ibadan, Nigeria: His Lineage Publishers House.

Dick, W., Carey, L., & Carey, J. O. (2005). *The Systematic Design of Instruction.* Pearson, New York.

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UNIT 3 SYSTEMS APPROACH IN EDUCATION AND INSTRUCTION

CONTENTS

1.0 INTRODUCTION

The use of system approach started in the field of engineering after the world war II. Since then it has been used in different field of human endeavors such as banking and insurance, transportation, textile industries etc. Systems approach entered into the field of education between the late 1950s and early 1960s and since then, systems approach has been used in solving educational problems.

2.0 INTENDED LEARNING OUTCOMES

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

- explain the role of systems approach in education
- examine the role of systems approach in instruction.

3.1 Systems Approach in Education

The development of systems approach in the military and industries extended in the spheres of education at the time when education was experiencing incursion from technology. In the late 1950s and during the 1960s, the fragmentary development in the field of audio-visual instructions alongside those of theories and principles in the field of education in general and educational psychology in particular called for total reorganization. This wave of reorientation in the field of education could not be divorced from the earlier wave being experienced in other fields such as science, economics, geography and engineering. For example, in the field of education, curriculum developers are redefining curriculum to include hidden curriculum in recognition of significant other variables that account for human learning. Educational psychologists are extending their areas of interests beyond behavioural

and cognitive aspects to environmental/ecological aspects in recognition of the interaction of such situational variables (classroom size, seat arrangement, building design) and other learning variables. The arrival of technology, has influenced the development of system concept in education and this has constituted a greater force behind the movement for the reorganization in the field (Adeoye, 2015).

The development of system approach is an evolutionary growth in the field of educational technology from its narrow base of audio-visual instruction. It was a response to advances in quantity and quality hardware and software instructional materials. The effects of this and growth in conceptual base include changing a structure of the curriculum development and role of the teacher. For instance, systems approach has forced on curriculum development the consideration of instructional technology at the planning stage rather than at the classroom implementation as it used to be. Systems approach conceives of teacher as manager of instruction rather than the purveyor of information.

A system analysis of education has been based on various parameters some of which are hierarchical structures, educational activities and functions of different components. For instance, an educational system could be analyzed in terms of different structural levels such as primary, secondary and university. Another scheme was based on the following activities: teaching and instruction, management and admission, facilities and support and communities and learners (Pratt & Steward, 2020). This same construct could be easily classified in terms of the following levels: micro level, meso level and macro level. The micro level is a phase of interaction among learners, teachers, materials, media, mode and content. The meso level is the level of educational system that refers to the activities of the educational institution relating to the translation of the policy encoded in national objectives into institutional objectives. At the macro level, an interface exists between an educational system and its environment. The interface with the environment refers to relationships between educational system and other systems- political, social and economic. These levels of educational systems allow a systems analyst to consider most if not all, the element in the system and their functional relationships. The assumption is that a defect at any level or in any sub-system, would affect other sub-system and the overall system. Consequently, a careful planning and management should ensure harmonious relationship between the input, throughput and output of the system at different levels.

3.2 Systems Approach to Instruction

Systems approach to instruction can be described as a set of procedure (a logical and methodological approach) whereby all the elements in an instructional situation are analysed and synthesized so as to objectivise and optimise the efficiency and effectiveness of instruction (Adeoye, 2015). It is a wholistic way of viewing the entire teaching-learning process. It ensures proper monitoring of the teaching-learning process so that the defective parts, omissions, redundancies etc. can be promptly located and corrected. Instructional system is efficient only when it is viewed as a unified whole that is, when it acts and functions as a unit. This means that laying bare the elements of an instructional system does not and should not imply isolating any of its elements. All the parts must be handled simultaneously because they are supposed to function interdependently together to achieve the desired objective. Basically, systems approach to instruction can be defined as a set of planned, learner centred, logical and methodological procedure whereby all the elements in an instructional situation are analyzed and synthesised to achieve efficient and effective teaching and learning. As a wholistic, systematic and dynamic procedure, systems approach requires multidimensional thinking as opposed to sequential, one-step-a-time approach.

4.0 CONCLUSION

In this unit, we have discussed systems approach in education and system analysis in education was based on various parameters. We also went ahead to discuss systems approach to instruction which can be described as a set of procedure (a logical and methodological approach) whereby all the elements in an instructional situation are analyzed and synthesized so as to bring about the efficiency and effectiveness of instruction

5.0 SUMMARY

A system analysis of education has been based on various parameters some of which are hierarchical structures, educational activities and functions of different components. For instance, an educational system could be analysed in terms of different structural levels such as primary, secondary and university. Systems approach to instruction is a wholistic way of viewing the entire teaching-learning process. It ensures proper monitoring of the teaching learning process so that the defective parts, omissions, redundancies etc. can be promptly located and corrected.

6.0 TUTOR-MARKED ASSIGNMENT

1. How is systems approach being applied in education?
2. Instructional system is efficient only when it is viewed as a unified whole. How can you use systems approach to do this**?**

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*. Ibadan, Nigeria: His Lineage Publishers House.

Dick, W., Carey, L., & Carey, J. O. (2005). *The Systematic Design of Instruction.* Pearson, New York.

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UNIT 4 VALUES AND LIMITATIONS OF SYSTEMS APPROACH

CONTENTS

1.0 INTRODUCTION

Systems approach delivers unto us a tool for analyzing problems and proffering solutions to educational issues. It is advantageous to apply such a tool to education and instruction because it is systematic. Other values of systems approach will be discussed in this unit. As good as systems approach is, it also has a lot of limitations in its applications. This would be explained in this unit.

2.0 INTENDED LEARNING OUTCOMES

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

- discuss the value of system approach
- explain the limitations of systems approach.

3.0 MAIN CONTENT

3.1 Relevance of System Approach to Instruction

As mentioned in unit 2, systems approach had been widely used in all areas of human endeavour. This indicates that it is of great importance to human activities. Asuquo and Chucktu (2016) highlight the values of system approach as follows:

- It helps to reveal omissions, redundancies and inconsistencies both in structure and relation among the elements of a system and this helps to eliminate wasted effort.
- It helps to focus attention on the requirements and performance of the total system so that the system might achieve optimal efficiency.
- The methodology satisfies the criterion of functional utility since it demands the selection of techniques and methods appropriate to the desired educational and training goals.
- It helps in planning, organizing and evaluating educational programs and instructional processes.
- It helps in the identification of various elements of the system. It can expose the hidden mechanism and entities.
- Systems approach gives chance for proper articulation of the problems. It is functional and very useful for effective communication. It involves specifying objectives, operationalising the objectives and implementing the objectives.
- By specifying our objectives and operationalizing and then implementing them enables us to devise the values or competency to develop what are the goals to be achieved. It helps us to pay attention to the requirements of any system.
- Problem of identification in systems approach leads to order, unity, manageability, harmonisation, and methodological approach which lead to a global and dynamic view of the system.
- It enables us to look at the appropriate methodology to achieve our goals.

3.2 Limitations of Systems Approach

The limitations of systems approach can be seen in the three areas of the approach. The areas are: design, implementation and evaluation.

3.2.1 Design

At this stage a lot of issues can crop up and they include:

i. Inadequate conceptualization of the paramount elements of the system e.g. the inputs and variable elements.
ii. Not being able to identify all the possible relationships of the various elements or parameters.
iii. Not being able to conceptualize the problems of transformation of output from the input. That is defining the strategy to be involved.
iv. On objectives, there could be difficulty in determining unambiguously input specifications.

v. There is also the problem of boundary conditions in education, knowing that education is an open system.

3.2.2 Implementation

The personnel involved in implementation are human beings. One of which is the teacher.

The teacher would determine the interaction(s) of the learners. The human nature is conditioned by many factors and could be unstable at most times. Thus, a perfectly planned strategy may not achieve its purpose.

We are thus faced with the:

1. Probabilistic nature of human beings.
2. Inadequate knowledge of behaviour dynamics of human and social systems.
3. Problem of inadequate articulation.
4. Compatibility of systems elements (Teacher, learner and materials), levels of communication, teacher s readiness.
5. Problem of equi-finality various means of getting educational objectives done.
6. Law of requisite variety- It says to cope with different abilities, you must have variety of resources. Pupils are different in abilities. It may be difficult to put into consideration all the abilities of all pupils when addressing an instructional problem. Whatever medium or strategy we choose may not satisfy all goals. Because of the limitations of the resources it is very difficult to satisfy law of requisite variety.

3.2.3 Evaluation

Evaluation process would involve various considerations. The considerations include:

- Making decision on the form of assessment. Knowing that evaluation process should not stop wit examination- there should be follow-up.
- Making decision about the product/output. Is it cognitive, affective or psychomotor?
- Making decision about what to evaluate and criteria- issues of validity and reliability.
- Social expectations must be considered too - those of the learners might be different from the teacher s vested interest and values.

All these considerations would take time if systems approach is applied. It would also be tedious and could get confusing at a stage thus discouraging the personnel implementing the approach

4.0 CONCLUSION

Systems approach should be applied with caution. As good as it is, if not properly handled it may lead to confusion in the process. It may also lead to shifting of focus from the main issues to minor issues.

5.0 SUMMARY

In this Unit, we have considered the values of systems approach as well as the limitations. The challenge here is to identify areas of possible applications that would not lead to confusion and shift of focus.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the values of systems approach
2. What are the limitations of the applications of systems approach to instruction?

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*. Ibadan, Nigeria: His Lineage Publishers House.

Dick, W., Carey, L., & Carey, J. O. (2005). *The Systematic Design of Instruction.* Pearson, New York.

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MODULE 3 PSYCHOLOGICAL THEORIES AND THEIR APPLICATIONS TO INSTRUCTION

UNIT 1 DEFINITION OF PSYCHOLOGY AND PSYCHOLOGICAL THEORIES OF LEARNING

CONTENTS

1.0 INTRODUCTION

Psychology is concerned with a wide area of interest. It has been defined as the systematic study of animal and human behavior (observed and mental process) and covers all kinds of pursuits from making dogs salivate at the sound of a bell to a study of the growth of intelligent behavior in humans. The term behavior includes all those aspects of human activity which we can observe: in effect, it represents the outward life of individual which is public knowledge and which can be noted objectively. But behavior also involves personal experience, which can be studied only by asking individuals to express their feeling and thoughts. Unit 1 starts you off by giving you the definition of psychology, terms used in Psychology and importance of educational psychology.

2.0 OBJECTIVES

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

- explain what is meant by psychology
- explain educational psychology
- give reasons why educational psychology is important.

3.1 Concept of Psychology

The term "psychology" is derived from two Greek words – *psyche* (soul) and *logos* (science or study). Thus, literally it means study or science of soul. But now it is no more considered as science of soul. It has moved away from this focus and established itself as a scientific discipline which deals with the various processes and behaviour of organism. Psychology is the scientific study of mind and behavior. Psychology is a social and biological study. Psychology is a science of behavior and mental processes. It is the scientific discipline that studies behavior and the behavioural expression of experience in humans and other animals. When psychology is seen as a science, it is a way of finding out knowledge about human and animal behavior that is novel using special research methods.

As a profession, it can be seen as a way of applying what is known to enhance human welfare. According to Steven-Fullbrook (2019) psychology is concerned with understanding of human behavior. It looks at the way behavior occurs, and the probability of its occurrence. Psychology is a very broad field, however for convenience; scholars have divided it into theoretical and applied psychology. Theoretical psychology includes social, comparative, physiological, abnormal, developmental and experimental psychology. Applied psychology includes, educational or school, engineering, vocational, personnel, industrial or organizational psychology.

3.2 Educational Psychology

Educational psychologists spend their time studying ways to describe and improve learning and teaching, Thus it may be convenient to say that, educational psychology is the psychology of learning and teaching, Steven-Fullbrook (2019) has suggested that educational psychology includes topics that span human development, individual differences, measurement, learning, and motivation and is both a data-driven and a theory-driven discipline. Educational psychology can therefore be seen as the application of psychology and psychological methods to the study of development, learning, motivation, instruction, assessment, and related issues that influence the interaction of teaching and learning.

3.3 Importance of Educational Psychology

Data gathered from educational psychology can be useful to the learner, teacher, administrator and the educational system itself. It can be applied to help the teachers obtain basic knowledge about the developmental stages of learners from birth to adulthood. It gives information about psychological factors which affect learning in the classroom. It can show why effective teachers work creatively or teach the way they do.. It can be used to find out the way new technologies such as computer; behaviour technology and curriculum techniques can be most effectively utilized. Through Educational Psychology learners get an understanding of how they can learn effectively and what makes them to remember and forget. The learner can find new ways of improving his learning activities and earn better scores in his various school subjects. According to Ostankowicz-Bazan (2019) educational psychology will facilitate effectiveness in the following ways amongst others:

1. General interest of learners in the subject matter.
2. Motivating learners.
3. Inculcating realistic aspiration in learners.
4. Knowing what learning pupils are ready for.
5. Deciding on difficulty level of subject.
6. Organizing subject matter sequentially and properly.
7. Integrating current and past learning.
8. Developing creativity.
9. Executing lesson plans.
10. Using adequate reinforcers.

Timar and Moraru (2012) and Ostankowicz-Bazan (2019) listed the following as part of the importance of educational psychology. It can be applied in:

1) Handling problems of discipline in a more rational and even democratic way. Teachers can now examine the cause of indiscipline among their students before reacting to them.
2) Teachers understanding of the importance of the use of audio-visual aids in classroom teaching.
3) Time-tabling of subjects is more carefully done so that no two difficult subjects are taught in successive periods.
4) Writing of textbook: Teachers now write books that are tailored in language and difficulty level appropriate to various classes of readers.
5) Co-curricular activities such as games, drama, creative activities are receiving some encouragement so as to let learners develop as many of their talents as possible.

6) School and class administration: The current trend is that those at the helm of affairs are becoming less autocratic, the idea of consultation or dialogue is becoming more popular.

On the theoretical level, Chauhan stated that educational psychology helps teachers to understand developmental characteristics of the learners and how to utilize these to the advantage of learners.

3.3.4 Psychological theories of learning

To help our understanding of how we learn, several psychologists have put forward some ideas and general principles which guide learning and they are called learning theories. These theories emanate from scientific efforts of workers in the field. Generally, the theories help to explain, organize, interpret a phenomenon or an event and direct our attention more sharply on learning activities. There are several learning theories.

They are for convenience, classified into two board groups:

a). Stimulus Response (S-R) theories.
b). Cognitive theory (field) theories.

The S-R theory concentrates on the study of overt behaviors that can be observed and measured (Chen 2011). It views the mind as a "black box" in the sense that response to stimulus can be observed quantitatively, totally ignoring the possibility of thought processes occurring in the mind. The cognitive theory was put forward as a reaction against the S-R theories. The theories strongly opposed the atomistic, molecular and mechanistic approach to behaviour as well as its quantification and statistical analysis. They disagreed that individuals learn in bits or through mastering separate parts of a problems as was put forward by S-R theories. They believed that we learn through insight. They thought that when a problem is presented, an individual would by conscious effort find its meaning. All these theories have implications for selection, application and use of instructional resources.

4.0 CONCLUSION

Psychology is the study of overt and covert behavior in humans and animals and therefore has an obvious contribution to make to our understanding of education problems relating to the learner, the processes of learning and the conditions of learning.

5.0 SUMMARY

Psychology is the scientific study of behavior and cognitive processes. The purpose of psychology is to describe thinking and behavior and look at the relationships between them and try to explain the causes for them. When a psychologist describes behavior or thought he does so to understand, predict, modify, or improve.

6.0 TUTOR-MARKED ASSIGNMENT

1. What is meant by psychology?
2. What is educational psychology?
3. List ten importance of educational psychology to teachers and students.

7.0 REFERENCES/FURTHER READINGS.

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UNIT 2 THE BEHAVIOURIST THEORY AND APPLICATIONS TO INSTRUCTION

CONTENT

1.0 INTRODUCTION

Behaviorism (or behaviourism), also called the learning perspective (where any physical action is a behavior), is a philosophy of psychology based on the proposition that all things which organisms do including acting, thinking and feeling can and should be regarded as behaviors. Behaviorism is based upon the premise that all theories should have observational correlates but that there are no philosophical differences between publicly observable processes (such as actions) and privately observable processes (such as thinking and feeling).

2.0 OBJECTIVES

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

- explain the behaviourists theory
- examine how it applies to instruction.
- list some resources that are based on the behaviourist theory.

3.0 MAIN CONTENT

3.1 Behaviourist Theory and Application to Instruction

Using behaviorist theory in the classroom can be rewarding for both students and teachers. Behavioral change occurs for a reason; students work for things that bring them positive feelings, and for approval from people they admire. They change behaviors to satisfy the desires they have learned to value. They generally avoid behaviors they associate with unpleasantness and develop habitual behaviors from those that are repeated often (Murtonen, Gruber & Lehtinen, 2017; Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019). The entire rationale of behavior

modification is that most behavior is learned. If behaviors can be learned, then they can also be unlearned or relearned. A behavior that goes unrewarded will be extinguished. Consistently ignoring an undesirable behavior will go far toward eliminating it. When the teacher does not respond angrily, the problem is forced back to its source-the student.

Based on observable changes in behaviour, behaviorism focuses on a new behavior patterns being repeated until it becomes automatic. It is described as a developmental theory that measures observable behaviors produced by a learner s response to stimuli. Responses to stimuli can be reinforced with positive or negative feedback to condition desired behaviors. Punishment is sometimes used in eliminating or reducing incorrect actions, followed by clarifying desired actions. Educational effects of behaviorism are keys in developing basic skills and foundations of understanding in all subject areas and in classroom management.

According to behaviorism, knowing is giving the correct response when exposed to a particular stimulus. The behaviorist is not concerned with how or why knowledge is obtained, but rather if the correct response is given. Learning is defined as nothing more than the acquisition of new behavior. In terms of the concept of learning, the process tends to be passive with regard to the behaviorist theory. The learner uses low level processing skills to understand material and the material is often isolated from real-world contexts or situations. Little responsibility is placed on the learner concerning his/her own education.

3.1 Instructional resources and Behaviourist Theory

A typical classroom instruction based on the behaviorist theory would encourage rote memorization, and drill and practice. Rote learning involves repetition of facts and figures until it is part of the learner such that when it is required, the learner automatically recalls the answer. There are many instructional resources that can promote rote learning. Some of them are

Flash cards with facts

- Picture cards
- Self-corrective puzzles and toys
- Computer assisted drill and practice packages
- Digital game-based instructional packages

Series of flash and picture cards can be presented to the learners, they memorize the cards one after the other, they use the pictures or other cues on the cards to remember the facts and figures.

Self-corrective puzzles and toys are those that have words, figures or numbers on them. Pieces can only be fitted together if they match. For example, a pair of puzzles can have one piece with the word cup and the other piece with the picture of a cup. It is only these 2 pieces that can be fitted together amongst all the other pieces in the set. If a piece with the picture of a cup and another piece with the word dog are brought together, they would not fit into one another.

Drill and practice come in form of card or board game pieces as well as computer software. These types of software provide positive and negative reinforcements for answering problems correctly or incorrectly. Facts are presented to the learner and choices given, depending on the choice made by the learner, computer provides a positive response to show the learner is correct, -most times by showing something positive like people clapping, bouquets of flower being presented or a simple statement- you are correct. If the learner s response is negative, the student would be given the immediate feedback too and guided to correct the choices made. All these are useful when learning basic facts, for example, states and capitals, words and opposite, animals and their young ones, multiplication facts and so on. Some of these resources can also be applied to higher order thinking skills.

4.0 CONCLUSION

Behaviorism is primarily concerned with observable and measurable aspects of human behavior. In defining behavior, behaviorist learning theories emphasize changes in behavior that result from stimulus-response associations made by the learner. Behavior is directed by stimuli. An individual selects one response instead of another because of prior conditioning and psychological drives existing at the moment of the action (Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019).

Behaviorists assert that the only behaviors worthy of study are those that can be directly observed; thus, it is actions, rather than thoughts or emotions, which are the legitimate object of study. Behaviorist theory does not explain abnormal behavior in terms of the brain or its inner workings. Assuming that human behavior is learned, behaviorists also hold that all behaviors can also be unlearned, and replaced by new behaviors; that is, when a behavior becomes unacceptable, it can be replaced by an acceptable one. A key element to this theory of learning is the rewarded response. The desired response must be rewarded in order for learning to take place (Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019).

5.0 SUMMARY

The theory of behaviorism concentrates on the study of overt behaviors that can be observed and measured. It views the mind as a "black box" in the sense that response to stimulus can be observed quantitatively, totally ignoring the possibility of thought processes occurring in the mind. Some key players in the development of the behaviorist theory were Pavlov, Watson, Thorndike and Skinner.

6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly explain Behaviorist theory and its application to instruction.
2. List some resources that are based on the behaviourist learning theory

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UNIT 3 THE CONSTRUCTIVISM THEORY AND ITS APPLICATION TO INSTRUCTION

CONTENTS

1.0 INTRODUCTION

It is amazing watching a child's growing from infancy to adulthood. We marvel at the mount of learning that has allowed the child gain considerable amount of understand to internalize with the expanding environment. A rhetoric question one may ask is - How do we learn? This child taught him/herself by gathering information and experiencing the world around him/her. Such learning exemplifies constructivism, an idea that has caused much excitement and interest among educators. Constructivism emphasizes the importance of the knowledge, beliefs, and skills an individual brings to the experience of learning. It recognizes the construction of new understanding as a combination of prior learning, new information, and readiness to learn. Individuals make choices about what new ideas to accept and how to fit them into their established views of the world.

2.0 OBJECTIVES

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

- explain the constructivist's theory
- describe the constructivist classroom
- give examples of instructional resources that are based on the constructivist theory.

3.0 MAIN CONTENT

3.1 The Constructivism Theory and its application to instruction

Constructivist thinking is rooted in several aspects of Piaget and Vygotsky's cognitive theories. Scientists and philosophers like Dewey, Piaget and Vygotsky have different perspectives and ideas about constructivism especially around its epistemology and ontology (Gul, 2016; Suhendi & Purwarno, 2018). Constructivism is described as a learning theory based on authentic and real-world situations. Students internalize and construct new knowledge based on past experiences. According to Ostankowicz-Bazan (2019) and Steven-Fullbrook (2019) knowledge is non-objective, temporary, constantly changing, and uncertain. Hence, learning is seen as the compilation of knowledge from concrete experiences, collaborative activities, and reflections and interpretations. Teaching means organizing the environment so that learners are motivated in exploring meaning and appreciating uncertainty. On this basis the learner will have a different understanding of the knowledge depending on his experience, and the perspective used in interpreting it.

The basic premise of constructivist theory is that people are said to learn when they have gained experience from what they learn. That is, people create their own meaning through experience. The constructivism theory is student-centered and encourages higher level processing skills to apply their working knowledge. The educational impact of constructivism is positive, in that instruction is based on student s prior knowledge, allowing them to make significant connections and solve complex problems. In terms of process of learning, acquiring and constructing new knowledge, the student plays an active role. The student brings past experiences and prior knowledge to the classroom and uses these to actively connect with new ideas or problems that are presented. Knowing is being able to internalize the material, connecting it with things you already know. Students use higher level processing skills, such as evaluating, analyzing and synthesis to apply newly constructed knowledge to problems or situations.

In other words, they have interpreted constructivism according to their own experience. In relation to that, the conclusion is that the learners' knowledge is their own life, their style and their life is an experience they get. Therefore, the teaching and learning process must be related to the practical real world so that the classroom is designed and shaped in such a way that teacher and students can share their knowledge and experience actively. Constructivism views the formation of knowledge as an active subject that creates cognitive structures in their interactions with the environment. Cognitive interaction will occur as far as reality is structured through the cognitive structure created by the subject itself. The cognitive structure must always be altered and adapted according to the demands of the environment and the changing organism. The

process of adjustment occurs continuously through the process of reconstruction (Amineh and Davatgari, 2015; Suhendi & Purwarno, 2018).

According to the theory of constructivism, student responsibility is greater, as they discover how new knowledge connects with prior knowledge. The learner continuously asks questions and guides their own learning process. Students learn that there is not just one way to solve problems, but rather multiple ways to finding answers. The teacher's role is to anticipate and address student misconceptions while presenting authentic questions and real-world problems or situations. The teacher does not provide clear answers on how to solve these problems or questions, but guides students to make sense of how things work according to what their past experiences are and how it applies to the new knowledge they are constructing. Thus, we can say that the "top-down" and "bottom-up" learning methodology is born of constructivism thinking. This means that the teacher will give the main idea then the students will get the details. In this thinking, the teacher does not teach the detail so that students will find it difficult to find an understanding of the details (Aljohani, 2017; Suhendi & Purwarno, 2018).

Typical classroom instruction, consistent with the constructivist learning theory may include: problem-based approach to teaching, hands-on activities, including the use of manipulatives, experimentation, and simulations. While the ideas listed above are just a few examples, the constructivist theory allows teachers to be creative and innovative with teaching. Details of some classroom instruction that demonstrate constructivism in the classroom are provided below. An example of a problem-based approach to teaching is when the teacher poses a problem to the class that needs to be solved. The problem is usually authentic with real world applications. An example problem may be the amount of littering in and around school grounds. The teacher would ask his/her students, how are students going to solve this problem? The students may then be required to write a proposal on their plan of action to help solve this problem. Hands-on activities are also used in the constructivist model of teaching. In mathematics classes, possessing considerable level of knowledge on the manipulation of figures are essential tools to help build student's understanding of mathematical concepts (Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019).

For example, students learning about perimeter might be given a tape measure to find the perimeter of the classroom. They may use this information to help buy carpet for the classroom. Other instructional practices include experimentation or simulations. Simulations provide real world experiences in a manipulated environment. Science classes

offer wonderful opportunities for students to experiment while doing laboratory experiment. This is also consistent with the hands-on approach. The students experiment to apply their working knowledge and to make sense of things in the world. Overall, the constructivist approach to teaching allows students to actively be involved in decision-making and problem-solving scenarios. Prior knowledge and past experiences help shape student connections to new material. Students use higher level processing skills and apply that knowledge to the world in which they live.

The most important aspect of constructivism theory is that in the learning process, the learner involvement is highly emphasized. This connotes that learners must actively develop their knowledge, not others. Learners must be responsible for their learning outcomes. Their creativity and liveliness will help them to stand alone in their cognitive life. Learning is directed at experimental learning which is a humanitarian adaptation based on concrete experience in the laboratory, discussions with classmates, who then contemplated and made ideas and developing new concepts (Suhendi & Purwarno, 2018). Therefore, the accentuation of educating and teaching is not focused on the educators but on the learners. The author concluded that some of the things that concern constructivist learning are: prioritizing real learning in the relevant context, giving priority to the process, inculcating learning in the context of social experience, and learning is done in order to construct experience (Suhendi & Purwarno, 2018).

3.2 Instructional Resources and Constructivist approach

The type of resources that is consistent with the constructivist approach is those that enable the students to construct solutions based on their experiences. They include 3- dimensional visuals such as toys, manipulatives, specimens and realia. Students can use manipulatives such as lego pieces (plastic building blocks, Cuisenaire rods, wooden pieces of different shapes and sizes) to solve problems in mathematics. In the science classroom, experimentation is carried out with specimen and other materials which the students try to manipulate. For example a bowl of various plastic materials, wooden toys, metal objects and so on, with a bowl of water and the student is to list materials that float or sink in water.

In applying constructivism theory, students can make additional knowledge such as writing poetry, short drama, scenarios, and so on because this theory of constructivism opens the learner’s curiosity about something new. In other cases, students can also build their knowledge to create and design something to their liking (Suhendi & Purwarno, 2018; (Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019). For

language teaching, students can construct stories, sentences and phrases using letter or word blocks which can come in plastic or wooden pieces. Simulations can be used in the social studies classroom to explain various issues in the society; the students are challenged to present representations of real life situations whether in form of prose, dance or drama. Resources such as charts, posters, picture albums and all other forms of visuals can be used to discover the prior experiences of the learners as well as help them to express the conceptions that have held prior to the class.

Dagar and Yadav (2016) opine that the use of multiple modes of representation goes a very long way in assisting the goal of experiencing multiple perspectives. Subsequently, the use of multiple media to enrich the learning environment provides the learners to view the topic being discussed in the class from multiple dimensions. The teacher should prepare a list of media available and supporting the topic. The teacher should also decide the use of media in supporting the authentic nature of the task. A combination of the following learning strategies can be used by the teachers to create constructivist learning environment:

- Use of multimedia/teaching aids
- Scaffolding
- Case studies
- Role playing
- Story telling
- Group discussions/Group activities (reciprocal Learning).
- Probing questions
- Project based learning
- Use of learning strategies for social and emotional learning of students.

The teacher can follow the under mentioned learning design while conducting group work or in general:

Situation: A situation will be presented to the students to work upon. Bridge: The teacher tries to know the existing knowledge level of the students and tries to find out the gap in the existing level and the level where they should reach at the end of discussion. This is carried out with the help of suitable questions and activities.

Grouping: The students are then divided into groups to explore the problem presented in their own perspective. Here the students of varying perspectives will be included in a group.

Questions: The teacher may adopt the strategy of probing questions to assist them move towards their goal.

Exhibit: The students are expected to exhibit or explain their understandings regarding the topic to other students.
Reflections: Students present their reflections on the entire process of building understanding of the topic.

All these resources and strategies pre-supposes that the students will have some first hand and hands on experiences; and build on those experiences with the teacher acting as the guide in facilitating learning through the constructivism theories.

4.0 CONCLUSION

Constructivism plays an important role in interpreting learning outcomes and designing environments to support learning. Constructivism as a paradigm or worldview posits that learning is an active, constructive process. Constructivist posits that in facilitating learning, individuals must have a background of knowledge, experience and interests so that they can create a unique relationship in building their knowledge. Hence, both students and teachers play a major role in facilitating and producing knowledge. Therefore, students are encouraged to broaden their own understanding and explain their own perspectives so that they are responsible for what they do. People actively construct or create their own subjective representations of objective reality. New information is linked to prior knowledge, thus mental representations are subjective.

5.0 SUMMARY

Constructivists believe that learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events.

6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly explain constructivist theory.
2. Describe a constructivist classroom.
3. What type of resources can be used in a constructivist classroom?

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UNIT 4 THE COGNITIVIST THEORY AND APPLICATION TO INSTRUCTION

CONTENTS

1.0 INTRODUCTION

The cognitive revolution in psychology was a response to behaviourism, which was the predominant school in experimental psychology at the time. This school was heavily influenced by Ivan Pavlov, B.F. Skinner, and other physiologists. They proposed that psychology could only become an objective science if it is based on observable behaviour in test subjects. Since mental events are not publicly observable, behaviourist psychologists avoided description of mental processes or the mind in their literature. Cognitive theorists view learning as involving the acquisition or reorganization of the cognitive structures through which humans process and store information while they also accept such behavioristic concepts, that much learning involves associations established through contiguity and repetition. They also acknowledge the importance of reinforcement, although they stress its role in providing feedback about the correctness of responses over its role as a motivator.

2.0 OBJECTIVES

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

- explain the cognitivist theory
- describe instruction that is based on cognitivist theory
- list resources that are consistent with the cognitivist theory.

3.1 The Cognitivist Theory and Application to Instruction

Cognitive Psychology focuses on the study of how people think, understand and know. It emphasises on learning of how people comprehend and represent outside world within them and how our ways

of thinking about the world influence our behaviour. The three important cognitive theories are Piaget's cognitive developmental theory, Vygotsky's sociocultural cognitive theory and information processing theories. From a cognitive learning perspective, learning involves the transformation of information in the environment into knowledge that is stored in the mind. Learning occurs when new knowledge is acquired or existing knowledge is modified by experience.

Among the main issues studied and discussed by cognitive psychologists are:

- The cognitive theories present a positive view of development, emphasizing conscious thinking.
- The cognitive theories (especially Piaget's and Vygotsky's) emphasize on the individual's active construction of understanding.
- Piaget's and Vygotsky's theories underscore the importance of examining developmental changes in children's thinking.
- The information processing theory offers detail descriptions of cognitive processes.

Among learning psychologists there emerged a growing realization that mental events or cognition could no longer be ignored. Cognitive psychologists share with behaviourists the belief that the study of learning should be objective and that learning theories should be developed from the results of empirical research. By observing the responses that individuals make to different stimulus conditions, Cognitivists believe that they can draw inferences about the nature of the internal cognitive processes that produce those responses. Many ideas and assumptions of cognitivism can be traced back to the early decades of the twentieth century. Of all theories, the theories of Jean Piaget of Switzerland are the ones that have provided psychology with much elaborated account of developmental changes in cognitive abilities.

3.2 Instructional Resources and general educational implications of cognitive theories

Familiarity with subject matter is not enough for teachers to engage in effective and pedagogically meaningful instructional practices. This is because professionalism in teacher education and development demands that teachers have not only a disciplinary knowledge base related to their subject but also a strong command of learning theories and their applications for instructional practices in the classroom. In other words, teachers should possess both subject-matter knowledge and pedagogical-content knowledge and skills to be able to effectively accomplish their subject's goals. They also need to understand what philosophical

assumptions and theoretical perspectives characterize a given instructional framework without succumbing to the notion that teachers first and foremost should be concerned with day-to-day practical issues and problems in the classroom rather than the theoretical ones that are supposed to concern academics or theorists (Murtonen, Gruber & Lehtinen, 2017; Ostankowicz-Bazan, 2019; Steven-Fullbrook, 2019).

Çeliköz, Erişen, and Şahin (2016) described cognitive processes as the mental activities that help information to transfer from one memory to another. These are composed of processes such as attention, perception, repetition, coding and retrieving as briefly described hereunder:

Attention: It is the power to focus on a certain stimulus and it constitutes the focal point of conscious. Steven-Fullbrook (2019) defines attention as the limitations about perceptional process and producing answers. Stimuli coming from outside come into sensory record first of all and here the stimulus is sent to short term memory and kept without making any changes, as it is taken from outside. Attention determines which information will pass to short time memory and which will not. Individuals have the capacity of directing their cognitive strengths towards certain resources of information in the environment.

Perception: perception can be defined as the process of describing the stimuli received through sensory organs or the process of turning sensory signals into meaningful experiences. In the process of perception, each individual has his/her own way of organizing the received signals; their perception of the signals also differs. An individual can pass just the information she/he can perceive among the environmental stimuli coming into sensory memory.

Repetition: Information is stored through repetition in order to stay in short term memory longer.

The reason why duration of keeping is longer is that coding is carried out and information is not lost before being sent to long-term memory. Perception has an active and selective quality, and an individual's perception of a certain stimulus or stimuli's situations is based on efficient preparation and directions (Steven-Fullbrook, 2019).

Coding: Most of the information coming from around is stored temporarily without coding. Coding is the transfer of information by means of relating the information in long-term memory to the information in short-term memory. The individual to be sent to long-term memory should code information meaningfully. Each individual carries out coding in the most meaningful way according to him or her. There are four basic elements (Efficiency, organization, articulation, and

memory supporting clues) in enriching the process of coding by means of increasing the meaningfulness of information (Steven-Fullbrook, 2019).

Storing: Suhendi and Purwarno (2018) suggested an important model to explain how accumulated information is stored. This model is based on the idea that information is established on verbal units including structures of subject and verb rather than perceptions. However, during the process of storing, information is stored in the appropriate part among episodic, semantic and procedural memories. Thus, the process of retrieving is carried out correctly.

Retrieving: retrieving has to do with looking for, finding and activating the information stored in the long-term memory. What is important is to find out the clues that will retrieve the stored information in this process. Ostankowicz-Bazan (2019) further buttressed that there is no real forgetting in long term memory. However, forgetting simply mean failure in retrieving what has been stored.

Generally, from the cognitivists' theory we have the following implications on learning:

1. Cognitive processes influence learning.
2. Learning difficulties often indicate ineffective or inappropriate cognitive processes.
3. As children grow, they become capable of increasingly more sophisticated thought.
4. People organize the things they learn.
5. New information is most easily acquired when people can associate it with things they have already learned.
6. People control their own learning. Ultimately students, not their teachers, determine what things will be learned and how they will be learned.

All types of Instructional resources can be used to promote the beliefs of the cognitivists. However, it is the content of the resources that may differ from those that the behaviourists or the constructivists would use. The content or the message of the resources must be such that would enhance the cognitive processes of the learners, that is , you just do not put all the information the learner needs on the resources, the learner has to put together various facts and information before he/she can arrive at the whole picture. For example, in science, to teach a principle or law, the learner is provided with all the Materials that would prove the principle or law. The learner then has to discover what should be done to the materials and how they can be used to prove the law. Whereas with the behaviourist, the learner is provided with a step by step guide of how

to use the materials and his/her main task is just to record what would happen (response) when the instructions are carried out or the instructions are varied (stimulus).

Another example to make this clearer is the use of computer assisted instructional packages for teaching. If a behaviourist is to use such packages to teach say - parts of speech, he /she would provide the learner with all the definitions of each part of speech with various examples. After this, the learner would be given a drill and practice exercise on the part of speech before going on to the other parts of speech, repeating the same process. The drill and practice exercise may require the learner to choose the state if the words presented are examples of that part of speech.

As the learner clicks on the correct answer, the computer gives it immediate feedback of results by reinforcing the correct answers and giving clues about the incorrect ones. The cognitivists on the other hand may provide all the definitions of all the parts of speech, give a list of words and sentences or phrases, and ask the learners to try to see which of the words or words in the sentences or phrases actually fits the definitions of all the parts of speech given. It is when the learner has done this, that the results would be given. With the cognitivists approach, the learner tries to make sense of all that has been presented and proceeds to use the computer to classify, differentiate and find similarities of the words provided. This latter use of the computer presents a more wholistic approach to learning the parts of speech, whereas the former one gives a bit by bit, sort of mechanistic approach. Other technology tools that are consistent with the cognitivist theory include Webquests, science discovery laboratory packages, mathematics problem solving software and so on.

4.0 CONCLUSION

Based on the thought process behind the behavior, changes in behavior are observed, and used as indicators as to what is happening inside the learner's mind. This is what the cognitivists practice. Cognitivism is concerned with illuminating how the process of learning occurs in different contexts by offering strategies that promote students' learning; teachers can benefit from this invaluable learning paradigm in their effort to help students attain the subject's goals.

5.0 SUMMARY

Contemporary cognitivism emphasizes mental processes and proposes that many aspects of learning may be unique to the human species. All types of learning resources could support the cognitivists perspectives of

learning, it all depends on whether the content or the message of the resource is presented in such a way as to enhance wholistic understanding of the concepts or not.

The role of the teacher is to present instructional materials in a manner that facilitates students' learning (e.g., helping students to review and connect previous learning on a topic before moving to new ideas about that topic, helping students understand the material by organising it effectively, understanding differences in students' learning styles, etc.)

6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly explain the cognitivist theory.
2. What types of resources are consistent with the cognitivist theory?

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MODULE 4 LEARNING PRINCIPLES AND INSTRUCTIONAL MEDIA

UNIT 1 BASIC CONCEPT OF INSTRUCTIONAL MEDIA

CONTENTS

1.0 INTRODUCTION

Teaching-learning process in the modern time makes greater demand on the use of instructional media on the part of the teachers who are supposed to help the learners understand certain concepts. In this unit, the concept of instructional media would be discussed; types and the reasons for using instructional media would also be presented briefly.

2.0 UNIT OBJECTIVES

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

- define instructional media
- identify types of instructional media
- discuss roles of instructional media in teaching and learning.

3.1 What are Instructional Media?

Media refers to a collection of materials and equipment that can be used effectively to promote communication. It can also be seen as channels through which messages, information, ideas and knowledge are disseminated. Any time a collection of materials and equipment are used for teaching and learning so as to promote effective communication in a classroom setting, then, we refer to it as instructional media. In other words, instructional media could be defined as collection of teaching-learning materials that constitute an integral component of an instructional process and are utilized in delivering educational information to the learners. Instructional media are used either for individual, small or large group of learners. It must be emphasized that instructional media are designed, prepared, produced, evaluated and utilized mainly to facilitate learners understanding of topics being taught.

3.2 Classification of Instructional Media

Instructional media are classified into different groups by different people depending on the perspective from which it is being viewed. There is no rigid classification of instructional media.
According to Onasanya (2015) instructional materials can be classified into:

1. Visual materials: These are materials whose information can only be decoded by the sense of seeing (i.e. eye). Examples include pictures, diagrams, projectors, charts, real objects, books, newspapers, journals, magazines, and so on.
2. Audio materials: These are materials which transmit information that could be decoded through the sense of hearing (i.e. ear). The objects produce sounds which in ripple forms are passed to learners who in turn interpret the sound waves hitting the ear drum. Examples include tape recording cassette, radio and human voice.
3. Audio – Visual materials are those materials that appeal to both the sense of sight and hearing. Audio-Visual materials include the television, video recording, and motion pictures with sound tracks, films and multimedia.

4. Electronic materials: These are media that require the use of electric current for their operation. Examples include radio, television, projectors, computer, and so on.
5. Non-Projected instructional materials include books and other printed materials, objects, specimens, models and games.
6. Projected instructional materials include films-8cm, films-16mm projector like OHP, filmstrip, opaque and slides

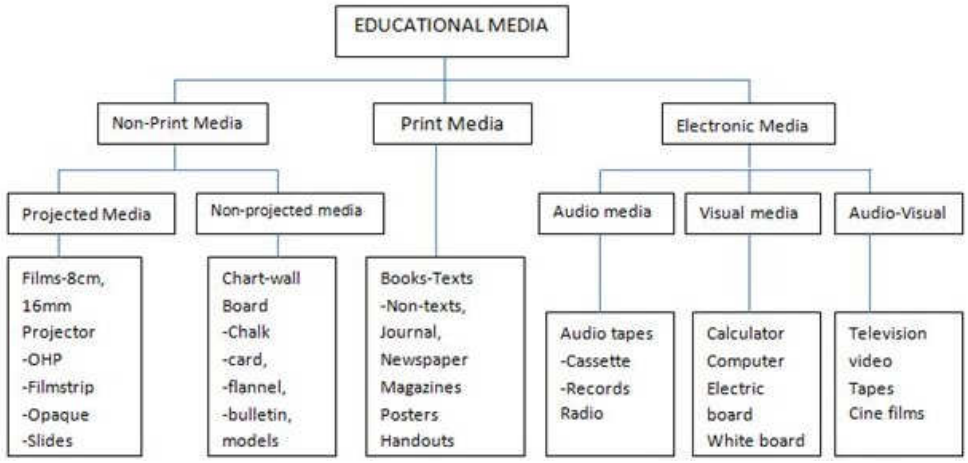

Fig. 1: Classification of Educational Media
Source: Onasanya (2015)

Obielodan (2015) further classified instructional media using their characteristics and defining attributes. Table1 depicts types of instructional media and their instructional qualities.

Table 1: Types of Media and their Instructional Qualities

Graphics	**Instructional Qualities**
Photographs	Provides needed level of detailed information
Drawings/Illustration	Build accurate mental models
Chart /Graphs	Represents relationships graphically (e.g. Theories, cause/effects, etc.
3D Graphics	Illustrates processes, flows, and structures
Logos, Icons, Banners, and symbolic elements	Displays mathematical and scientific concepts, Provides visual cues
Programmed Interactions	**Instructional Qualities**
Animations	Illustrates steps, stages, etc.
Interactive Tutorials	Provides authentic and relevant experiences
Tools (e.g. displaying, concepts,	Allows for experimentation

student aids, etc	
Drag and drop media	Engages learner
Scenarios	Provides feedback
Games & Simulations	Give learner control & choice
Self-checks & Assessments	Facilitates learner reflection
Audio	**Instructional Qualities**
Podcast	Appeals to aural learners
Narrated lectures	Stimulates mental conceptualization and learner imagination
Student Presentations	Humanizes & personalizes student-instructor interaction
Interviews & guest speakers	Adds credibility/authority to the presentation
Synchronous audio conferencing	Provides audio cues
Music and sound effects	Focuses student attention
Video	**Instructional Qualities**
Vodcast	Demonstrates processes, procedures, & behaviours that can be difficult to describe
Recorded lectures	Provides real world content
Student presentations	Broadens the capacity to present information in rich format
Movies and TV programmes	Appeals to visual learners
Desktop recordings & screen captures	Compresses or expands time for "big/little pictures" view

Table 1 vividly shows that instructional media appeals to all senses in order to facilitate learning and make learning more experiential and

permanency in retention of what has been learnt.

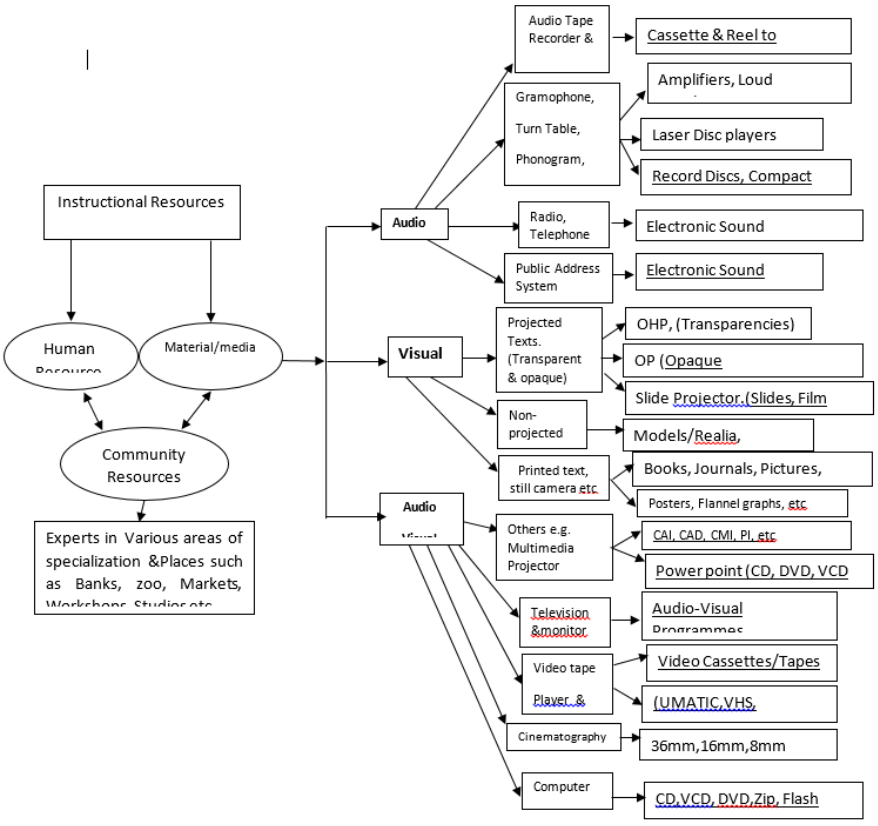

Fig. 2: Taxonomy of Instructional Resources

In Figure 2, Olumorin (2015) observed that instructional resources encompass both human and non-human resources which can also be referred to as material/media resources; however, they are all derivable from the community and therefore called community resources. It is from the material/media resources end that the three arms of audio, visual and audio-visual/multimedia are derived. In the figure, the underlined resources are the software to the equipment categorized along in the corresponding boxes.

3.3.2 Why do we use Instructional Media?

According to Obielodan (2015), good instructional medium is like a window whose duty is to let in light for clearer presentation of instructional contents. In like manner, teachers need instructional media in their teaching situations to illuminate contents to aid students' achievement of instructional objectives. The author further enumerates some reasons why instructional media should be employed in teaching and learning situations are discussed as hereunder:

(i) Instructional media assist teachers to transmit the knowledge in an impressive way giving diversity to classroom teaching and making learning more effective.
(ii) Instructional media ensures that students acquire larger knowledge and ensures that the gained knowledge is relatively permanent.
(iii) The interactive elements of Instructional media make learning more meaningful and satisfying to learners.
(iv) When instructional materials are used in teaching and learning situations, it appeals to the learners' sensory organs thereby motivating the learners
(v) It helps the teachers in preparing and presenting the learning contents in a more organised and systematic way
(vi) Instructional media helps teachers to attract and maintain students' attention on relevant learning contents.
(vii) Instructional media also helps to adjust learning climate to promote acceptance of an idea by the students (p.22).

Subsequently, instructional media play unquantifiable roles in:

a. making learning real, permanent and immediate;
b. gives learners opportunity to learn at their own pace, rate and convenience;
c. helps in focusing attention and motivating learners;
d. brings to the classroom what is not in the immediate environment of the learners; and
e. saves time and energy.

4.0 CONCLUSION

In this unit, we have examined the definition of media in general and instructional media in particular. We also discussed the various types of instructional media as well as the reasons for using instructional media in the classroom.

5.0 SUMMARY

Instructional media could be defined as collection of teaching-learning materials that constitute an integral component of an instructional process and are utilized in delivering educational information to the learners. Instructional media can be classified into audio media, visual media and audio-visual media. One of the reasons for using instructional media is that it makes learning real, permanent and immediate.

6.0 TUTOR-MARKED ASSIGNMENT

- What is instructional media?
- What are audio-visual media? Give three examples of audio-visual media.
- Why do we use instructional media in the classroom?

7.0 REFERENCES/FURTHER READING

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UNIT 2 LEARNING THEORY AND INSTRUCTIONAL MEDIA 1 (MOTIVATION)

CONTENTS

1.0 INTRODUCTION

The study of motivation is crucial for a teacher, this is because without a knowledge of the way and means of encouraging children s learning, knowing about their appetites, being sensitive to their interests, the teacher s task would be impossible. In this unit, motivation and types of motivation would be discussed. Also, instructional media that teachers can use to motivate their learners would be discussed.

2.0 OBJECTIVES

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

- define motivation
- discuss types of motivation
- identify instructional media that can motivate learners.

3.0 MAIN CONTENT

3.1 Motivation

Learning is an activity undertaken with the aim of acquiring knowledge, mastering certain competencies and forming student attitudes. The success of learning can be seen from the changes in behavior and student learning outcomes. Learning activities will run smoothly when students have the motivation to learn (Puspitarini & Hanif, 2019). According to Steven-Fullbrook (2019), motivation can be interpreted as the driving force that arises in the students that lead to learning activities, ensuring the continuity of the learning process, and provide guidance in the learning process so that the learning objectives can be

achieved. Motivation to learn is one of the decisive factors in the achievement of learning objectives. Through learning motivation, students will have the drive to follow the ongoing learning process.

Motivation can be defined as the internal processes and external incentives which spur us to satisfy some need. It can also be defined as a force that energizes, sustains, and direct a behaviour towards a goal. Researchers have found a high correlation between motivation and achievement. Motivation however occurs in two forms- intrinsic and extrinsic motivation.

Intrinsic motivation: This is motivation which is due to internal factors. The stimuli may be abstract or not physical but mental in nature such as love of something, interest to achieve, ambition.

Extrinsic motivation: This is motivation due to some external factors such as concrete rewards, money, prizes and gifts. Extrinsically motivated learners study hard for a test because they believe studying will lead to high test scores or teacher compliments while intrinsically motivated learners' study because they want to understand the content and view learning as a worthwhile activity in itself.

3.2 Instructional Media That Increases Students Motivation to Learn

Basically, using instructional media in the teaching-learning process increases learners' motivation to learn. According to Puspitarini and Hanif (2019) there are many ways to foster students' motivation to learn which can be executed by the teacher. These are by: using a challenging learning strategy such as a game can motivate students and bringing a contextual and fresh material or interactive media can stimulate it from inside. In addition to the motivation that comes from within their-self, motivation can also be enhanced through the stimuli provided through the student learning environment. Motivation can also be provided in form of the responses that the learners receive while using the Media. For example, a student that uses drill and practice software package which gives it immediate knowledge of results through colorful and creative presentations of the learner's marks would be highly motivated to continue on the tasks.

Teachers have an important role in the process of improving students' learning motivation because teachers have a lot of time with students in school. Teachers can improve students' learning motivation by developing learning strategies as an external motivation for students to learn. Learning strategies include methods and media used in the learning process (Puspitarini & Hanif, 2019). Some of the instructional

media that can motivate learners to learn are computer, real objects, motion pictures etc. Learners get motivated to learn when they can use all their senses while interacting with the media. They are not passive hearers of the teacher, rather they see colorful visuals, listen to creatively packaged audio lessons and manipulate audiovisuals while learning.

Learning media that is utilized appropriately in the learning process will become a more effective and efficient support tool in achieving the learning objectives. In addition learning media will also increase students' learning motivation, this is in line with the statement expressed Yusuf and Onasanya (2015) that the benefits of instructional media include: (a) By using learning media, the learning process will be more interesting, so it can lead to motivate student learning; (b) Can clarify learning materials, so that students can easily understand the material and enable students to master the learning objectives; (c) By using instructional media, the learning process becomes more varied. The material is not only delivered orally, so students do not get bored quickly and more effectively and efficiently; and (d) Students listening to the material presented by the teacher, doing more learning activities such as: observing, doing, demonstrating, and others (Puspitarini & Hanif, 2019). The features of learning media can promote the experiential classroom so that foster the students' learning engagement.

4.0 CONCLUSION

In this unit we have examined the concept of motivation. We also discussed the two forms of motivation. Some Instructional media that increase students' motivation were also presented.

5.0 SUMMARY

Motivation is a force that energizes, sustains, and directs a behaviour towards a goal. Motivation however occurs in two forms- intrinsic and extrinsic motivation. Computer, motion pictures and real objects are some of the instructional media that motivate learners to learn

6.0 TUTOR-MARKED ASSIGNMENT

- What is motivation?
- Discuss the two forms of motivations.
- What makes media motivating to learners?

7.0 REFERENCES/FURTHER READING

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UNIT 3 LEARNING THEORY AND INSTRUCTIONAL MEDIA 2 (KNOWLEDGE OF RESULT)

CONTENTS

1.0 INTRODUCTION

Immediate knowledge of results or feedback is one of the factors that can motivate learners to learn. In this unit, knowledge of results will be discussed as well as the instructional media that gives learners immediate knowledge of results.

2.0 OBJECTIVES

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

- discuss knowledge of results.
- highlight instructional media that provide immediate knowledge of result.

3.0 MAIN CONTENT

3.1 Knowledge of Result

Most theorists and practitioners agreed that favourable feedback about performance has a positive effect on subsequent performance. Skinner called it reinforcement; Thorndike called it the Law of Effect. In human terms, there must be some reassurances about level of successes and to be a really effective reinforcer in educational achievement, knowledge of result must follow quickly upon completion of a task for it to have maximum influence on future performance.

School work should be dealt with and commented on as soon as possible after children have completed work; children s progress should be up to date and fed back to them while the work is still fresh in their mind and still likely to have a reinforcing effect.

3.2 Instructional Media That Gives Knowledge of Results

Prominent among the instructional media that produce immediate knowledge of results are Computer (Computer Assisted Instruction), programmed instruction (text-based or computer-based test), self-correcting materials such as puzzles and toys. A pair of self-correcting puzzles that can only fit together perfectly must have matching concepts on them. For example, on one piece of the puzzle, there is a multiplication fact (e.g. 3x2) and on the other, the answer to the multiplication fact (6). These two pieces would fit together giving the learner the clue that he/she is correct. However, another piece which has for example- 9 on it will not fit together with the piece that has 3x2 on it. This is because 3x2 is not equal to 9. By trying all the pieces, the learner automatically is given an immediate feedback of all his/her responses.
The application of computers to instruction has made the issue of immediate knowledge of results easier. The software would have been programmed to grade the students after they give their responses without recourse to the teacher. This has made individualized instruction possible and it removes the stress of unending grading of scripts from the teacher.

4.0 CONCLUSION

In this unit, we have discussed knowledge of results as well as examples of the instructional media that can have inbuilt in them - immediate knowledge of results.

5.0 SUMMARY

Favourable feedback about performance has a positive effect on subsequent performance. Skinner called it reinforcement; Thorndike called it the Law of Effect. Knowledge of result must follow quickly upon completion of a task for it to have maximum influence on future performance. Computer, programmed instruction and self-correcting materials are some of the instructional media that produces immediate knowledge of results.

6.0 TUTOR-MARKED ASSIGNMENT

1. In two simple sentences, discuss knowledge of results.
2. Mention three instructional media that give immediate knowledge of results

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*. Ibadan, Nigeria: His Lineage Publishers House.

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UNIT 4 LEARNING THEORY AND INSTRUCTIONAL MEDIA 3 (WHOLE OR PART LEARNING)

CONTENTS

1.0 INTRODUCTION

A theoretical debate surrounds the subject of whether it is better to learn by small steps or large chunks. In this unit, the concepts of whole and part learning will be discussed. Instructional media that can facilitate whole and part learning would also be presented.

2.0 OBJECTIVES

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

- discuss whole or part learning
- give examples of instructional media that can facilitate whole or part learning.

3.0 MAIN CONTENT

3.1 Whole or Part Learning

Individuals learn in different ways, with some children, especially the mentally disadvantaged, small steps are useful because with a limited channel capacity there are more chances that the information will be held in mind. Part learning by small steps, however, might be a disadvantage where the material is connected in some way. Poetry, theories and laws of science, for example, really need to be presented in their entirety; otherwise the relationship between the parts is lost.

Where total content is important, whole learning is an advantage because taking part of the content out of context may lead to material

being meaningless. When to use whole or part learning is a matter which the teacher must judge from his or her experience of the content.

3.2 Instructional Media That Can Facilitate Whole or Part Learning

It is actually the content of the instructional resources that distinguishes whether the resource can be used for whole or part learning. Thus it is safe to conclude that all resources could be used for whole or part learning, depending on how the concept is presented. For example, a flip chart or picture album could be used to show pictures of electrical appliances for the first few pages and the next pages show picture of mechanical appliances, in the house, Another flip chart or picture album however could contain various appliances used in the house whether electrical or not and the student asked to sort the pictures according to categories given. The former falls under part learning while the latter promotes whole learning.

Despite what has been said however, there are some of the instructional media that can be used to facilitate a type of learning more easily than the other. For whole learning, computers, 3- dimensional visuals and projected visuals can easily be used. While for part learning, materials for laboratory experiments, drill and practice or tutorial software, self-corrective puzzles, manipulatives in the form of building blocks, mock-ups and models are easily applicable.

4.0 CONCLUSION

In this unit we have discussed whole or part learning. Also discussed in this unit are the instructional media that can facilitate whole or part learning.

5.0 SUMMARY

Part learning is the type of learning whereby contents are learnt in small bits, while in whole learning the content is not broken down in bits to be able to see the connections and relationships easily. There are instructional materials that easily promote learning over the other.

6.0 TUTOR-MARKED ASSIGNMENT

1. Differentiate between whole and part learning?
2. What type of instructional resources can a teacher use for whole and part learning?

7.0 REFERENCES/FURTHER READING

Adeoye, B. F. (2015). *Technology Guide for Teaching and Learning*, Ibadan, Nigeria: His Lineage Publishers House.

Puspitarini, Y. D., & Hanif, M. (2019). Using Learning Media to Increase Learning Motivation in Elementary School. *Anatolian Journal of Education*, 4(2), 53-60. https://doi.org/10.29333/aje.2019.426a.

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UNIT 5 LEARNING THEORY AND INSTRUCTIONAL MEDIA 4 (CLOSURE)

CONTENTS

1.0 INTRODUCTION

The primary goal of educational systems is to provide learners with the information, skills, and dispositions needed to engage in reflective and critical thought in order to be an effective member of a complex and information-rich society. The sense of urgency that educators feel in regard to this obligation is not new, but is heightened by the unprecedented access to information made possible by the internet or World Wide Web. To effectively address this goal, educators and educational psychologists need to understand both the ability and the willingness of learners to grapple effectively with information. A psychological construct that may illuminate heretofore unexplored aspects of learners' willingness or reluctance to grapple with information is the need for closure. Closure as a term was introduced by Brown in 1975 as part of microteaching programmes in the 1970s. In this unit, the concept of closure would be discussed as well as instructional media that can facilitate closure.

2.0 OBJECTIVES

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

- discuss closure
- highlight instructional media that can facilitate closure.

3.0 MAIN CONTENT

3.1 Closure

Whatever the preferred method of conducting lesson, the teacher must achieve goals, mainly predetermined, by the end of the lesson. Being

able to benefit from an information-rich academic environment requires that learners adopt a certain epistemic stance. That stance must include, among other things, a finely honed sense of adequate knowledge justification. That is, learners need to be able to judge for themselves both when they do not yet know enough and when they do. Psychological constructs that bear on the ability and motivation to make these epistemic judgments include epistemic beliefs, critical and reflective thought, need for cognition, and need for closure. This process of rounding off a lesson is called closure. The need for closure, on the other hand, refers to the motivated tendency to seek structure, simplify complex information, and avoid ambiguity. A ragged or half-finished ending to a lesson can be unproductive in terms of retention of lesson content, and ends the teacher-pupil contact in a tense rather than a relaxed fashion. This aspect of content completion and personal relationships are sometimes referred to as cognitive and social closure. According to Vlerick and Boudry (2017), cognitive closure can be achieved in a variety of ways. Frequently a short written or oral test is used just to remind children of the main points. The teacher may present a summary on the blackboard or a visual aid. Sometimes the closure is delayed for homework. The reason for cognitive closure are that it: (i) directs attention to the need for consolidating what has transpired in the section or lesson; (ii) gives the section or lesson a coherence so that people can identify a relevant chunk of information; (iii) offers an opportunity for revision of the main points; (iv) enables the teacher to appraise and reinforce work well done.

3.2 Instructional Media That Facilitates Closure

Based on analysis of how the need for closure may influence the classroom applies to educators just as it does to learners. Like the students, educators with a high dispositional need for nonspecific closure may treat knowledge and knowing in ways that reduce the likelihood of encountering uncertainty in the classroom. Such instructors may oversimplify course content and favor assignments that are unlikely to promote critical thinking in learners. For instance, those that requires only memorization of facts and other superficial processing of information (Vlerick & Boudry, 2017). A lot of instructional media can be used to facilitate closure in the classroom. Pictures that are not completed can be used where you ask students to complete the pictures to form a scene or a process. One can also play a video drama to and stop at a point in the video; the learners are then asked to give suggestions on how the story in the video would end. This can be used in subjects like social studies, literature, religious and moral instruction and Health Education. One can also set up and perform an experiment to a point and ask the learners to finish the experiment**.** Posters, charts and other visuals can also provide closure in the classroom; a summary of

the content learnt is presented on the visual and used at the end of the class. The computer can be used as well to provide homework for the students based on the content learnt.

4.0 CONCLUSION

In this unit, we have looked at closure, how closure can be achieved and the reasons for cognitive closure. We also looked at instructional media that can help to facilitate closure in the teaching-learning process.

5.0 SUMMARY

Closure is a process of rounding off a lesson. The aspect of content completion and personal relationships are sometimes referred to as cognitive and social closure. Cognitive closure can be achieved in a variety of ways. Instructional media that can be used to facilitate closure in the classroom include incomplete pictures of a scene or process. In summary, teachers often determine when a lesson contains enough information and experiences to adequately convey a concept or body of knowledge, when a learning activity is planned in adequate detail, or when a quiz adequately assesses student learning. A construct that has had considerable traction within social psychology—and to provide some guidance as to how specific and nonspecific closure needs might be related to classroom teaching and learning using instructional media.

6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly explain the concept of closure.
2. Explain how visuals can be used to facilitate closure and give examples of such visuals.

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UNIT 6 LEARNING THEORY AND INSTRUCTIONAL MEDIA 5 (LEARNING STYLES 1- VISUAL)

CONTENTS

1.0 INTRODUCTION

Because individuals are different in a number of ways, they tend to learn in different ways. The way an individual prefers to learn is called the person's learning style. It is widely believed that understanding students' learning style and preferences can benefit both students and teachers. As students learn in various ways, it appears impossible to change the learning style of each student in the classroom. Instead, teachers might modify their teaching style so as to be more consistent with their students learning style (Awla, 2014). There are basically three learning styles Visual, Auditory and Kinesthetic. In this unit, visual learning style would be discussed as well as instructional media that help visual learners. The generally definition of learning styles is a characteristic cognitive, effective, and psychosocial behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Learning styles may be defined in multiple ways, depending upon one's perspective. Here are a few definitions of learning styles. Awla (2014) defines learning styles as the manner in which individuals perceive and process information in learning situations. He argues that learning style preference is one aspect of learning style, and refers to the choice of one learning situation or condition over another.

There are three main learning styles, namely, visual, auditory, and kinesthetic. The definitions of these learning styles are as follows: Visual learners think in pictures and learn best in visual images. They depend on the instructor's or facilitator's non-verbal cues such as body language to help with understanding. Sometimes, visual learners like sitting in the front of the classroom. They also take descriptive notes over the material being presented. Auditory, these individuals discover information through listening and interpreting information by the means

of pitch, emphasis and speed. These individuals gain knowledge from reading out loud in the classroom and may not have a full understanding of information that is written. Kinesthetic learner, individuals that are kinesthetic learn best with and active “hands-on” approach. These learners like interaction with the physical world. Most of the time kinesthetic learners have a difficult time staying on target and can become unfocused effortlessly (Rogowsky, Calhoun, & Tallal, 2020).

2.0 OBJECTIVES

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

- describe who is a visual learner
- highlight the instructional media that helps visual learners learn best.

3.1 Visual Learning Style

Visual learning style access visual images neither created nor remembered. A visual learner is someone who learns best by seeing a representation of what he or she is studying, either in pictures, or written words or an actual demonstration. Good visual learners tend to:

- Be strong readers – always read intensively and extensively.
- Be vast and have excellent spelling skills of words (usually because they can see the words).
- Preferably, after a certain age, allow them to read for themselves rather than have stories been read to them.
- Find it easier to remember the things they see rather than what they hear (such as having instruction written down rather than spoken, reading a map rather than listening to directions).
- Doodle (like drawing, scribbling or sketching) when thinking, talking on the phone, or during a meeting

Hence, students that prefer visual learning styles have preference to color, spatial relations, mental portraits and images stand out in this type of learning style. Students who choses visual possibly were characterized as follows: firstly, those students regularly pay attention to everything, to keep up appearances. Second, students learn by viewing images rather than read out (Rogowsky, Calhoun, & Tallal, 2020). Finally, students require thorough overview and objectives to capture details and remember what they saw.

3.2 Instructional Media That Can Help Visual Learners to Learn

Since visual learners learn best by watching on visual media; and audio-visual media would be most effective for their instruction. They could either be projected or non-projected visuals. The paramount thing to the visual learner is that they can see what they are leaning. Examples of the visual/ audio-visual instructional media are charts, flat pictures, motion pictures, posters, text books, journals maps, books, etc.

4.0 CONCLUSION

In this unit, we have discussed the concept of visual learning style as well as the instructional media that are best for visual learners.

5.0 SUMMARY

A visual learner is someone who learns best by seeing a representation of what he or she is studying, either in pictures, or written words or an actual demonstration. Since visual learners learn best by seeing, visual and audio-visual media would be best in passing instruction to them.

6.0 TUTOR-MARKED ASSIGNMENT

1. Explain the term Visual Learner.
2. List some of the instructional media that are best for visual learners.

7.0 REFERENCES/FURTHER READING

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UNIT 7 LEARNING THEORY AND INSTRUCTIONAL MEDIA 6 (LEARNING STYLES 2- AUDITORY)

CONTENTS

1.0 INTRODUCTION

Because individuals are different in a number of ways, they tend to learn in different ways. In this unit, auditory learning style would be discussed as well as instructional media that help auditory learners.

2.0 OBJECTIVES

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

- explain who is an auditory learner
- gives examples of instructional media that help auditory learners to learn best.

3.1 Auditory Learning Style

An auditory learner is someone who learns best by hearing things. Such learners prefer hearing material in a lecture or classroom setting. Good auditory learners tend to:

- Prefer talking to writing when describing something.
- Prefer making a telephone call to writing a letter.
- Become distracted by noise more than a visual learner.
- Have a stronger sense for music than visual art such as painting.
- Remember what they hear easily than what they see

Whereas auditory learning style accesses all kinds of sounds and words that were created and remembered music, tone, rhythm, rhyme, internal dialogue and a prominent voice in this learning style (Syofyan & Siwi, 2018).. Students having special preference to auditory style of learning

were characterized as follows. First, the students' attention is split. Second, the students talk to the rhythmic pattern. Third, students learn by listening and moving the lips/voice while reading. Finally, students tend to have a dialogue internally and externally (Awla, 2014; Rogowsky, Calhoun & Tallal, 2020).

3.2 Instructional Media That Can Help Auditory Learners to Learn

Since auditory learners learn best by hearing, audio media as well as instruction presented in the classroom would be best in passing instruction to them. Auditory learners can be assisted to record classroom lectures, discussions and group presentations which they can use over and over again. Examples of audio-based media that can help facilitate the learning of auditory learners include radio, audio CD, audio cassette and its player. To enhance the audio materials that can be used for auditory learners, music can be in the background or at intervals while presenting the content (Rogowsky, Calhoun & Tallal, 2020). The presentation should be slow paced such that the learner would be able to write or quickly scribble points that he/she wants to remember and the content can also be broken into bits and small steps with musical interlude.

4.0 CONCLUSION

In this unit, we have discussed the concept of auditory learning style as well as the instructional media that are best for auditory learners.

5.0 SUMMARY

An auditory learner is someone who learns best by hearing things. Such learners prefer hearing material in a lecture or classroom setting. Since visual learners learn best by hearing, audio media would be most effective in giving them instructions.

6.0 TUTOR-MARKED ASSIGNMENT

1. Explain the term Auditory Learner.
2. Give examples of instructional media that are best for auditory learners.

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UNIT 8 LEARNING THEORY AND INSTRUCTIONAL MEDIA 7 (LEARNING STYLES 3- KINESTHETIC)

CONTENTS

1.0 INTRODUCTION

Because individuals are different in a number of ways, hence, individual tend to learn in different ways. In this unit, kinesthetic learning style would be discussed as well as instructional media that help kinesthetic learners learn better.

2.0 OBJECTIVES

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

- describe who is a kinesthetic learner
- give examples of instructional media that will help kinesthetic learners learn best.

3.1 Kinesthetic Learning Style

A kinesthetic learner is someone who actually learns best by doing it. Moving, touching, and experiencing something firsthand are often essential to this type of learner. Good kinesthetic learners tend to:

- Speak and write more slowly than the other two modalities of learners, but have confident fluid physical movements.
- Use hand gesture more often.
- Prefers hands-on learning to just seeing or hearing about something.
- Have difficulty sitting down for extended periods when younger (not because of any disorder, but because they are used to moving and exploring their world, and formal school discourages this).

- Memorize things better and more easily when being physically active (such as walking around the room when reciting)
- Understand things better when they are acted out.

Kinesthetic learning style accesses all types of motion and emotion created and remembered movement, coordination, rhythm, emotional response and physical comfort prominently in this learning style (Syofyan & Siwi, 2018). Students having special preference for kinesthetic style of learning may be characterized as follows: first, students tend to like touching people, stand close together and a lot of moves. Second, students learn by doing, pointing/writing while reading, and responding physically. Finally, such students prefer "let's go and see" (Syofyan & Siwi, 2018).

3.2 Instructional Media That Can Help Kinesthetic Learners to Learn

Since kinesthetic learners learn best by manipulation. Building and construction blocks, knock down toys would be more preferred media used for effective delivery of instruction to them. Media such as models, specimens, mock-ups enable the kinesthetic learner to interact with materials rather than listening to or passively watching the instruction being given.

4.0 CONCLUSION

In this unit, we have discussed the concept of kinesthetic learning style as well as the instructional media that are best for the kinesthetic learners.

5.0 SUMMARY

A kinesthetic learner is someone who actually learns best by doing it. Moving, touching, and experiencing something firsthand are often essential to this type of learner. Since kinesthetic learners learn best by doing, manipulative such as blocks and legos would be best in passing instruction to them.

6.0 TUTOR-MARKED ASSIGNMENT

1. Who is a kinesthetic learner?
2. Give examples of instructional media that are best for Kinesthetic learners

7.0 REFERENCES/FURTHER READING

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