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SYSTEMS APPROACH FOR DESIGNING QUALITY INSTRUCTIONAL PACKAGES FOR TEACHER EDUCATION PROGRAMME IN NIGERIA

Victor-Ishikaku, Eunice C*

*PhD,

Department of Curriculum Studies and Educational Technology,
 Ignatius Ajuru University of Education,
 Rumuolumeni, Port Harcourt Rivers State,
 NIGERIA

ABSTRACT

Teacher education is the pillar on which the education system of a nation hinges on. It detects the quality of the manpower for the nation and the level of its development. As such quality teacher education is the basis for quality education and society. Planning and organizing the instructional packages of the teacher education programme is necessary to produce quality teachers. The instructional process is a system having its components as the learner, the teacher, instructional strategy, instructional media, learning content, learning experiences and environment, and evaluation. Having quality instructional process will therefore require applying the principles and techniques of system approach which are learner analysis, needs analysis, setting of goals, task analysis, selecting appropriate instructional strategy and media, development of learning content and experiences, and evaluation amongst others. Application of these principles for instructional process will lead to better results to achieve the goal of the teacher education system. The paper highlighted some of the gains of applying systems approach as; gives a good view of the system to the stakeholders, enhances division of labour hence leads to efficiency and achievement of goals, improves strategies and decision making and makes for orderliness and job performance.

KEYWORDS: *Systems Approach, Teacher Education, Quality, Instructional Packages, Instructional Design, Instructional Process*

INTRODUCTION

Teacher education is the pillar on which the economic growth and development of a nation hinges on (Usoro, 2016). It is the bridge that connects the education system and the economic growth and development of any nation. This is because it is the sector that prepares the manpower needed to man the different sectors that will engineer the growth of the economy. It is imperative therefore that the teacher education sector should be given the right attention if it must accomplish its mandate. There can be no growth and development in the society if there is no requisite manpower, and there can be no manpower if there are no teachers to educate the manpower. In the same vein there can be no teacher if there is no quality teacher education. The teacher education system is the crucible where qualified teachers are birthed. According to the National Policy on Education quality teacher education is that teacher education that meets the goal of teacher education specifications. To produce such quality of teachers, programmes are designed which the trainee-teachers are passed through to equip them. Adequate planning of the teacher education programme is therefore fundamental to producing quality teachers.

The teaching learning process is the crucible of the education system where the learner is birthed and packaged with the requisite knowledge, skill, competencies and attitudes to be a potential manpower for economic development. The teaching learning process has several components as a system and so operates as such. As such, applying the principles of system approach in the instructional designing process is very necessary to achieve the goal of the teacher education programme. It demands a holistic approach in attending to instructional process, each component being given the attention it demands (Dike, 2017). Based on this backdrop, the paper advocates for the application of System Approach in designing instruction in the teacher education programme.

System Approach is a system management approach that looks at a system holistically in a bid to pay adequate attention to every part of the system. It is a problem-solving strategy that looks at every aspect of a system, making sure that no part of the system is left out or undermined in the overall achievement of the set goals of the system (Victor, 2011). It is a disciplined way of applying right principles and techniques in running a system. The instructional process is a system and as such demands the application of the System Approach to its planning and implementation.

Quality Teacher Education

Education is a fundamental tool in the growth and development of the individual and the society at large. The level of advancement of a society to a very large extent is dependent on her education. Education therefore is an indispensable tool for the economic growth and development of a nation; hence the National Policy on Education sees it as an “instrument par excellence” for national development (Federal Republic of Nigeria, 2014). Teacher education in particular is fundamental to these growth and development. It is the nexus that connects education and societal development. How? The teacher prepares the manpower that brings about the growth and development of the society. The quality of the manpower therefore is a reflection of the quality of her education system, which in turn reflects the quality of the teachers who man the education system. The education system is like a quarry site where the learners are molded and fashioned to be fit to contribute meaningfully to the society. The teacher is the engineer and manager of the quarry site. What this portends is that the teacher education should be given the

priority attention it deserves, especially the process of planning for the instructional packages, if it can play her role of raising manpower that will fit into the 21st century knowledge economy society.

Teacher education is that specialized education or training given to would-be teachers in a formal education system to prepare them for the job of teaching (Taylor 2016). It involves equipping the would-be teacher with pedagogical and methodological skills, competencies and attitudes needed for effective and efficient classroom interaction (Chikwe 2008). It also requires knowledge of how to effectively integrate theories and principles in philosophy, sociology, psychology and instructional technology as it relates to education and translate them into practical classroom activities for effective learning to take place (Victor-Ishikaku and Nyenwe, 2015). Preparing teachers who will fit into this role would therefore require proper planning. This is where Systems Approach in designing instructional packages for teacher education programme comes in to raise the right quality of teachers needed.

Quality teacher education is about the teacher education being able to satisfy her stakeholders. With this in mind can one say that the teacher education system in Nigeria is satisfying her stakeholder vis-à-vis the goals of the teacher education programme. Your answer is as good as mine, no. Quality is about improvement; adding value to products, systems, services and process such that it meets the expectations of the stakeholders hence the argument for the application of Systems Approach to teacher education Instructional packages and Process in order to meet the desired quality.

Instructional system

Instruction is the art of giving direction or guide to an individual. It could be used interchangeably with teaching. It involves guiding someone to acquire skill, knowledge, idea, attitude and appreciation. It is a concept that is associated with the teaching-learning process. Instruction in the classroom setting is about helping the learner to acquire knowledge, skill and change in behaviour to achieve educational goals. It is a process involving series of activities organized in such a manner as to help the learner to acquire the needed change in behavior hence it is called Instructional Process. The Instructional Process is the heartbeat of the education system (Victor-Ishikaku, 2017). It determines the success or failure of the education system and at the long run the nation. It is pertinent therefore to give adequate attention to the planning and carrying out of the instructional process for effective learning. It is on this premise that the paper advocates the use of Systems Approach for planning instructional process for quality teacher education.

The instructional process involves the teacher, the learner, learning content, method or strategy for the instruction and the medium for the instruction. This implies that the process of instruction is a system with several components.

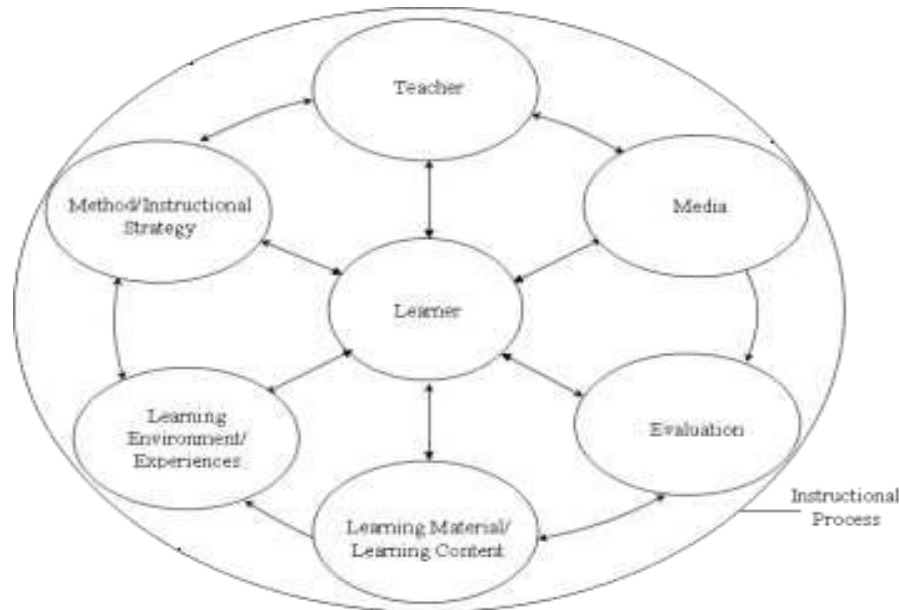


Fig. 1: Instructional Process as a System

Drawing from this illustration, the components are interrelated. This implies that they must work together to achieve the stated goal of the instruction system. This therefore calls for planning. This is what is done in instructional design. The learner is at the centre of the instructional process system. Every plan for effectiveness revolves around the learner as the success of the system is determined through the learner. Organizing the instructional process therefore to produce the desired result (competent graduate teachers) depends on how the components are planned for and organized which is the main thrust of instructional designs.

Instructional Design

Instructional Design (ID) is the art and science of creating instructional content and experiences which are based on instructional and pedagogical theories, and innovative instructional practices. It is the systematic manner of designing instruction according to designed goal taking into cognizance instructional theories and learning theories. It involves identifying the learning needs, objectives and designing instruction and its mode of delivery to meet the identified needs (Reiser & Dempsey, 2007). It makes for effective and efficient learning experiences and processes. It analyzes and solves problems hindering learning, creating conditions to respond to instruction. It translates theories and principles of and instruction into strategies for learning activities, instructional materials, and evaluation. It encourages and motivates the learners to have in-depth knowledge and skills of a concept. The essence is to create effective, efficient and interesting instructional experiences to facilitate learning. Instructional Design according to Wikipedia (2017) is about planning instructional experiences in such a way that it will enhance the acquisition of knowledge, skills, attitudes and competencies. It involves creating conducive and appealing instructional experiences and environment such that the learner will find it interesting and enjoyable to learn. It is a systematic approach for creating effective and efficient instructional experiences for quality instruction. To Arshavskiy (2013) it involves activities such as; knowledge of the learner, setting goals, development of instructional strategy, selection of

media, development of instructional materials and activities, evaluation. Through Instructional designs learning principles are converted into educational practices. Instructional designs follows five steps; analysis, design, development, implementation and evaluation (Arshavskiy,2013).

Systems Approach (SA)

Systems approach (SA) stems from the word system and approach. What is a system? This concept could be viewed from two perspectives; it could be seen as a method, pattern or technique for accomplishing a task effectively and efficiently. The second perspective is a system been seen as a body or entity with several components. In this presentation, system will be discussed in the light of these perspectives as an entity with several parts and as a method for accomplishing a task. Approach on the other hand is about how to do something; a pattern or way of achieving agoal.

System according to Dike (2017) is a unit with several interacted components which function independently and corporately to achieve a common goal. Online Dictionary (2018) defined it as a set of units working together as parts of a complex whole which are interconnected to form a network. The author also went further to define system as a set of laid down principles, approach, process, technique, practice, mode, framework, principles, strategies or procedure for carrying out a task in an organized manner or method to achieve desired result. In the light of these definitions, a system therefore is an entity with integral parts or unit, each having its own functions and also working together with the other units in a well-organized pattern to achieve a corporate goal of the system. A system could be likened to the human body having the head, eye, hands, heart, ear, stomach etc. Each of these parts has their independent functions. Each of them performs their own functions to make the individual a healthy living being which is their corporate goal. This by implication means that if one of the parts fails to perform its function it affects the functions of the others thereby leading to the collapse of the entire body which is the system. The corporate function of a system is therefore the essence of its existence. The synergy between components of instructional system could be illustrated as seen in figure 1 above.

Systems Approach then is about having systems view in thinking or mindset. It is about having a frame of mind of always looking at issues holistically, starting with the parts; focusing on every part and its functions independently and corporately without neglecting any aspect to achieve the goal of the system (Dike 2017). It involves applying logical problem-solving process to identify and solve problems so as to achieve best results. In a nutshell it is a problem-solving strategy that looks into every aspect of a system, making sure that no part of the system is undermined in the overall achievement of the set goals of the system. The concept of Systems Approach can be applied to every human endeavour hence the argument for its application in the teacher education system for quality education in Nigeria. Systems Approach is a concept that has to do with the state of the mind; approaching issues with the mindset that the thing in question may not just exist as an entity but relates with others to exist. In Systems Approach every unit has significant role to play in the achievement of the overall goal of the system.

The principles of general system theory stated some principles that apply to every kind of system. It presupposes that every system should be looked at holistically as looking at them individually could only lead to the disintegration of the system. It provides a holistic approach to

solving system problems, looking at the units in relation to the whole system. Some of these principles are;

1. **Wholeness:** This principle sees the system as an indivisible entity. It states that the more the degree of wholeness within a system, the more efficient the system will become. The emphasis here is on the synergy amongst the units of the system.
2. **Systemization:** This principle states that the more the units in the system synergize and work cooperatively the more effective and efficient the system will become. The emphasis here is division of labour and the functionality of each unit.
3. **System and system environment:** It states that the more the system is compatible with its environment the more successful it will become. This shows that the system itself interacts with other system. It is not an island and so the influence of other system on the activities of a system must be taken into consideration for effective operations.
4. **Optimization:** The more the process and functioning of the units work with the goals of the system in view the more effective the system will be. This emphasizes the need to have the overall goal of the system in view in the operations of the individual components.
5. **Equifinality:** The more alternatives solution and ways are provided in attaining the goal of the system the more successful it will be; as there are many ways to achieving the same goal.
6. **Variety of information:** The more channel and variety of information is made available for the units of the system the more successful the system will be. Relevant information exchange within the system is key for the success of the system.
7. **Negative entropy (Negentropy):** States that for the system to survive the system must be open and adaptive to its environment. Permeability to the environment is needed for the system to revitalize itself (Dike,2017)

Theoretical Framework

This discourse is anchored on the Systems Theory of Ludwig Von Bertalanffy who is called the father of Systems Approach. Ludwig von Bertalanffy proposed the systems theory in 1950 and it was expounded by Ross Ashby in 1964. The author stated that a system is a complex element which interacts with each other and with the environment to achieve the corporate goal of the system. In his words “in order to understand an organized whole, we must know both the parts as well as the relationship between them. The theory states that the relationship between systems and their environment is the source of their complexity and interdependence, that the whole possess properties that cannot be identified from the analysis of the constituent parts when looked at individually. Understanding them therefore will stem from knowing the concepts both in parts and as a whole. The success of the whole begins with the organization of the parts, recognizing that the parts are not static but interact with each other and it is dynamic. Relating this to this discourse, the instructional system is made up of several elements each having a role to play in the achievement of the goal of the teacher education system. Knowing that each element is significant it is therefore necessary to give due attention to each element if the overall goal of the system must be achieved, hence the need for systems approach in planning the instructional process of teacher education programme.

Why Systems Approach to Instruction

The application of Systems Approach to the education system will be likened to proverbial statement of putting a round peg in a round hole. This of course will result in achievement of the goal of education. Systems Approach involves three aspects of system; input, process and output. System Approach integrates all functions into interrelated team effort, provides structure framework for the development process of the system from concept to production. This ensures that all function of the system is optimally harmonized to achieve maximum results; to enhance productivity and meeting goals. This will lead to better decision making which will be based on valid information and data for quality result (Gordon, 2018). Some of the specific benefits that will accrue to the teacher education system if this approach is followed as outlined as;

- gives a good view of the system
- gives due attention to the synergy that exist between the parts of the system and its environment
- Foresees challenges and make action plans to checkmate it.
- Exposes to system managers the risk involved in piecemeal approach to problem-solving in the system.
- Makes for orderliness and specification of roles and duties of the workforce.
- Improves strategies and decision-making
- Enhances/division of labour hence better output (Gordon, 2018; Kami,2011 and Omar,2016).

Guidelines for effective designing of Instructional Package using Systems Approach

The application of Systems Approach principles to the planning of the instruction is like putting a round peg into a round hole. It will require looking at the instructional system as a system which it is; the input, process/ implementation and output components, giving due attention to its characteristics, functions, process and goals. Each of the Instructional process component should be looked at critically in terms of its needs, characteristics, content, method, and evaluation. The relationship that exists amongst them and how they influence each other for the overall goal of the education system is fundamental to its success. It will require breaking down the entire structure of the system into its component elements, showing the workings of each and the interrelationship between them. It implies that in applying Systems Approach in the running of a system, you do not take any part of the system for granted.

Breaking down the system into its components involve system analysis; breaking down the entire system into its subsystems, their activities and the working relationship between them. No problem or challenge should be taken at the face level. In the event of a challenge, it is analyzed properly to actually identify the course as to proffer the right solution. This is because the problem of a system cannot particularly be from the system. A problem in one subsystem can cause the malfunctioning of another subsystem. For instance, that learners performed very poorly in an examination may not just be because they were not properly taught. Proper assessment of the poor performance could be traced to other challenges such as unconducive learning environment, inadequate learning facilities, and family issues amongst others.

Specifically steps for applying Systems Approach principles are;

1. Needs analysis to identify the need of the learner and the system
2. System analysis; breaking down the system into its component part for proper assessment of the subsystem.
3. Identification of the area of problem, need or priority.
4. Generating possible solutions strategies.
5. Choice of appropriate solution strategies.
6. Development of tools and devices needed to meet the need according to the different generated solution alternatives.
7. Implementation of the solution strategies.
8. Making alternative decision on solution strategies where necessary.
9. Evaluation of decisions/solutions for effectiveness (Rogers,2003)

Evaluation is an integral part of every step in Systems Approach. This is because the knowledge of the effectiveness of the solutions proffered and the tools devised is very important to ascertain the achievement of the set goal. The Systems Approach steps occur in sequence, one leading to the other and the result of each step ploughed into the next step for the achievement of the overall goal of the system. According to Education International (EI) and ASCD in Slade (2011), three key issues that must be considered for quality education are teacher quality, quality learning resources and quality enabling learning environment. Proper planning of these components is therefore pertinent for quality teacher education.

Relating this to the classroom applying Systems Approach to the planning of Instruction is like the case of putting a square peg into a square hole which result is obvious; effectiveness and efficiency. It involves looking at the instructional process as the system which it is and applying the Systems Approach principles in its planning. The learner (trainee teacher) is at the centre of the Instructional Process. The focus of the instructional system is on the learner, the success of the learner is the success of the instructional system, and therefore all the plans revolve around the learner as seen in the figure above.

CONCLUSION

It is a truism that planning is fundamental to the success of any programme, hence the saying that “planning is the key to success”. Quality Teacher Education programme is therefore factor of quality planning. This will require the application of Systems Approach principles in its instructional process. The call to revisit the Nigeria Teacher education programme, applying the principles of Systems Approach in its teaching-learning process will be a step in the right direction. Systems Approach to Instructional Process advocates following the right sequence; analysis, design, development, implementation and evaluation. Following this sequence will ensure that every component of the Instruction Process is given its deserved attention and will result to the achievement of the goals of the Teacher Education programme. This will demand political will by the government to do the right thing, seriousness on the part of teacher

education managers to apply the systems approach principles and the teachers themselves to apply the principles in the teaching learning process.

Suggestions

Based on the discourse the following recommendations are made;

1. There should be the political will be the government and teacher education stakeholder to get it right in the teacher education programme as it is the fulcrum on which the other education system hinges on.
2. The education stakeholders should have the right perception of the teacher education programme, as a system and to carry out its programmes as such to achieve the goals of the programme.
3. Training and retraining of teacher education providers should be carried out regularly to sensitize and keep them abreast with the principles and operations of systems approach so as to apply it in the running of the teacher education programme.
4. The teacher education curriculum planners, teachers and other stakeholder should imbibe the Systems Approach mindset and painstakingly follow the principles to achieve the goals of the teacher education programme.
5. Teacher education stakeholders should make every effort to painstakingly pursue the programmes following best practices in education.

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