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"System Approach In Teaching"

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ABSTRACT *System approach is a rational, problem solving method of analyzing the educational process and making it more effective. Currently, the call for systemic change in education is becoming increasingly strident. Unfortunately, the word system has been popularized without a fundamental understanding of its implications, to the point where everything is a system but nothing really is treated as one. Many people say they are using a systems approach, but almost no one really is. Decision makers need to fully understand why our current approaches won't work and what is different about the systems approach. Even a small child can use a hammer and saw, but it takes a master carpenter who fully understands the tools and their limitations to build a house. .A system is a set of elements that function as a whole to achieve a common purpose. This paper highlights concepts of system, system approach, steps of system approach,mastry learning etc.*

SYSTEM APPROACH IN TEAHCING

System approach is a rational, problem solving method of analyzing the educational process and making it more effective. Currently, the call for systemic change in education is becoming increasingly strident. Unfortunately, the word system has been popularized without a fundamental understanding of its implications, to the point where everything is a system but nothing really is treated as one. Many people say they are using a systems approach, but almost no one really is. Furthermore, popular interpretations of systems tend to use inappropriate mechanical models and metaphors. Decision makers need to fully understand why our current approaches won't work and what is different about the systems approach. Even a small child can use a hammer and saw, but it takes a master carpenter who fully understands the tools and their limitations to build a house. We can begin to build a few structures of our own by establishing some definitions for terms needed to discuss systems thinking meaningfully.A system is a set of elements that function as a whole to achieve a common purpose. A subsystem is a component of a larger system; for example, the circulatory system is a subsystem of a human system. Occasionally, the larger system is referred to as a supra-system when it is talked about in relation to its subsystems.An element is a necessary but not self-sufficient component of a system. That is, the system cannot achieve its purpose without the element, and the element by itself cannot replicate the system's functions.Systems are characterized by synergy—the whole (system) is greater than the sum of its parts (elements), because the relationship among the elements adds value to the system. A system's hierarchy refers to the number of levels within the system. Each successively higher level of the hierarchy encompasses all of the processes at each lower level and is increasingly complex as the number of elements and the relationship among elements increases. As the number of elements, or subsystems, increases linearly, the number of relationships increases exponentially. What is of particular significance from the systems perspective is that the energy required to maintain the relationships increases at an even faster rate.Hierarchies may be natural, for example, birth order in a family, or arbitrary, as is the case in a designed system, such as a school or business. Arbitrary hierarchies require more energy to maintain than do natural hierarchies, and they frequently divert energy from goal attainment. For example, maintaining the age-grade hierarchy is schools can be shown to be counterproductive in many cases.

The improvement of quality involves the design of an educational system that not only optimizes the relationship among the elements but also between the educational system and its environment. In general, this means designing a system that is more open, organic, pluralistic, and complex. Banathy (1991, p. 80) has described such a system.

It interacts with constantly changing (multiple) environments and coordinates with many other systems in the environment.

It copes with constant change, uncertainty, and ambiguity while maintaining the ability to co-evolve with the environment by changing itself and transforming and the environment.

It lives and deals creatively with change and welcomes—not just tolerates—complex and ambiguous situations.

It becomes an organizational learning systems, capable of differentiating among situations where maintaining the organization by adjustments and corrections is appropriate (single-loop learning) and those where changing and redesigning are called for (double-loop learning) (Argyris 1982).

It seeks and finds new purposes, carves out new niches in the environment, and develops increased capacity for self-reference, self-correction, self-direction, self-organization, and self-renewal.

It recognizes that the continuing knowledge explosion requires a two-pronged increase in specialization and diversification and integration and generalization.

It increases the amount of information it can process, processes it rapidly, distributes it to a larger number of groups and people, and transforms the information into organizational knowledge.

This approach entails analysis of problems and synthesis solutions. In the analysis phase, a given situation is examined to identify the forces affecting it. The situation is viewed as a system composed of interconnected parts and related to other systems. For example a classroom may be portrayed as a system in which teachers collaborate with students in the shared construction of meaning in the context of community expectations under the constrains of limited time and resources. Analyses are constructed to determine the sorts of knowledge and skills most useful to students and the order in which these should be learned. In the synthesis phase, modifications in the system (inventions) are designed to overcome forces that interfere with the achievement of the system's goals. In classroom, such modifications generally take the form of instructional programs.

The purpose of system analysis is to get the "Best environment in the best place for the best people at the best time and in the best price.

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The system approach in instruction is an integrated programmed complex of instructional media, hardware and personnel whose components are structured a single unit with a schedule of time and sequential phasing.

The concept of system:
The system concept provides a framework for visualizing internal and external environmental factors as an integrated whole.

The system analysis is a way of identifying goals of any system and synthetically working out different steps to move towards the goals.

Steps of system approach:
1. Understanding and analyzing present situations.
2. Framing the goals for the desired outcomes.
3. Identifying the various tools for evaluating the obtained goals.
4 Creating alternative situations.
5. Finding out solution considering cost-benefit analysis.
6. Making framework of the system.
7. Making design of the supervision of the system.
8. Making framework to introduce the new solution.

Steps of instructional system:
The followings are the steps of instructional systems.

1. To determine instructional objectives in behavioral terms.
2. To ascertain tasks for obtaining objectives.
3. To determine multi-media approach.
4. To state past experiences of the learners or entering behaviour.
5. To consider suitable instructional strategies for perma nent learning.
6. To consider appropriate learning experiences of the learners.
7. To select proper teaching aids and other resources to influence learning of the learners.
8. To assign roles for the teachers in team teaching.
9. To try out the whole programme on a small group of learners.
10. To make the evaluation of learning outcomes of the learners in terms of stated behavioural objectives.

The system approach consists of main four foundations in educational settings as under:
A. Input
B. Process
C. Output
D. Feedback

Feedback Romiszowski (1997) stated ideas of the system approach. An overall approach which involves tackling problems in a approach- disciplined manner keeping priorities in mind.The sub-system definition making up the overall system can be designed, fitted, checked andoperated so as to achieve the overall objective efficiently (Rowntree, 1974). Properties of Inputs, outputs and processes are defined in relation to each the systems other. A change in one part will affect all other parts. Each decision is justified in terms of pre-planned objectives. Systems models are used which show how each phase fits into the next and feedback loops facilitate revision and preview.

Environmental constraints which impinge on the school or teaching centre are considered. Systematic consideration of the suitability of solutions to problems as compared to their alternatives is carried out. The systems approach is a problem-solving method which helps to:
1. Define the problem as clearly as possible.
2. Analyse the problem and identify alternative solutions.
3. Select from the alternatives and develop the most viable solution mix.
4. Implement and test the solution.
5. Evaluate the effectiveness and worth of the solution.

The systems approach is not necessarily a step-by-step process. Analysis, synthesis and evaluation are recurring stages repeated throughout the process and not necessarily in the traditional format of beginning, middle and end. The system approach had it influence on instructional designing and yielding from these ideas were Bloom's 'Learning for Mastery' and Keller´s 'Personalized System of Instruction'.

Bloom developed a system for mastery learning. In this system, mastery is defined in terms of specific educational objectives, and mastery of each unit is essential for students before they advance to the next one.

Bloom mastery learning.
Bloom considered these expectations, built upon the normal curve, as the most wasteful and destructive aspect of the educational system. He believed that most students, or about 90%, could master what is to be taught. The basic instructional task was to define the course into educational units and find methods and material to help the students to reach the set level. Then the student would be tested with a formative test that would either indicate mastery or emphasise on what was still needed to be learned, to reach the next level. To reach mastery the student needed to get 80 - 90 % right.

Bloom based his theory of Learning for Mastery on Carroll's model of learning which is:
1. Time allowed,
2. Perseverance.
3. Aptitude,
4. Quality of instruction.
5. Ability to Understand Instruction.

The summative evaluation is a general assessment which 'sums up' the total achievement in the course and grates the students.

Bloom (1968) suggests that the mastery model to teaching will greatly improve the performance of low - aptitude students and will have a smaller effect on high - aptitude students. Because of individualised classes give students the time and instruction they individually need, the model suggests, high levels of achievement should be reacted by all students not only a few. According to Bloom (1968) nearly all students can achieve mastery of material in a course given enough time and quality of instruction that they need. Teaching for mastery raises the overall level of achievement and reduces variations of performance. The strongest influence of mastery teaching is for the weaker students.

Kellers Plan
This consists of five main elements:
1. Mastery criteria,
2. Self pace,
3. Stress upon the written word,
4. The use of proctors
5. Lectures used for motivation rather than sources of information.

The following field of education could be covered by the dynamic utilization of system approach.

1. Teaching-learning process.
2. Administration and supervision of school.
3. Examination and evaluation.
4. Formal, non-formal and adult education.
5. Counseling and guidance.

Phase of instructional design:
The system approach could be applied for best instructional design into three phases:
Phase-I: Planning instructional approach.

There are three steps for this phase as under:
Step A: To ascertain objective
Step B: To determine past experiences/entering behaviour.
Step C: To identify suitable strategies.

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Phase-II: Execution of instructional approach

There are two steps for this phase.
Step A: To fix the role of teachers
Step B: To make the synthesis and implementation.

Phase-III: Evaluation of instructional approach.
Step A: To evaluate the outcomes of the learners with the consideration of behavioural objectives.

Step B: To make the analysis of the results with the follow up of modification

System approach is very helpful for the completion of each and every work effectively and result oriented in our daily life nd in society in general..

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