The Systems Approach in Education

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Systems approach is a management tool that allows individuals to examine all aspects of the organization, to inter relate the effects of one set of decisions to another and to optimally use all the resources at hand to solve the problem. Systems approach makes it possible to analyse teaching-learning situations for the purpose of taking decisions. The development of systems analysis make it possible to take all the components of a system into consideration, understand their inter-relationships, perceive alternative solutions and foresee their impact, and make adjustments when needed through constantly checking results. The most basic concept of this approach is that no one element exists in a vacuum, but that each always relates to other components of the system. Thus, if one element is altered, the relationships between it and the other factors are potentially affected. This modification places stress on the entire system. If all the interrelated components can be made consistent with the reformed element, the change is accepted, the system restabilizes, and a type of synergy, or effectively directed smooth functioning of the system, results. Similarly in a social system, if the factors that affect learning are connected and supporting each other the resulting effect will be greater than the sum of each factor separately. However, if the reform in one element of the system is inconsistent with all the other components of the system, the change is rejected as the system strives to regulate itself to reestablish a steady state following the disruption. If we want to analyse and understand a teaching/learning situation-in a classroom, school, or group of young people-it is not enough to see it as the product of the activities of a set of individuals with their own objectives and characteristics: we must regard it as a system, that is, as a totality more complex than the mere sum of its constituent parts, because of the interrelationships between them. An instructional situation is not, of course, a system in the sense understood by the general theory of systems for which a system is a set of discrete elements that interact to attain a particular goal. Thus, each system is a coherent and indivisible whole that can be System distinguished from its surroundings. Moreover, this whole is organized since it reflects the dynamic and reciprocal interaction of its various components, and any change in one element will necessarily change others and consequently the entire system. A system cannot be reduced to the sum of its parts, since the latter do not have the same significance when studied in isolation as when seen as contributing to the whole. If we looked at each component separately, therefore, we might miss the factors that constitute the system as such.

The systems approach will make each person involved in education, whether student, parent, teacher or senior official, more fully aware how complex learning situations are and give them a clearer insight into the action equired of them at their particular levels of responsibility.

The components of the system

A system is defined by its components, that is, by its constituent parts and by their interrelationships. Like any system involving a social mode of operation, whether formal or informal, the instructional situation contains a number Product of constants. We shall begin with the product (or output) which, in this case, is what has to be learned (for example, the ability to read). It is in fact by virtue of its affinity to a production process that we can regard the learning situation as a system. The product results from the activities of the class, that is, from interactions between the teacher, the students, the resources and the constraints, via the method used. The input of a given system (a particular learning activity, for example) is made up of the students, who undergo a certain transformation during the process but who may also be regarded as products of the previous situation.

Input and output (product) are two principal factors marking the interaction between a teaching learning situation and its environment. But there are also other factors which constantly enter into play, and this is why it is, as we shall see, so difficult to define precisely what a system comprises, where it begins and end. The time and energy spent by the teacher on preparation for Resources himself and for his students, the time and energy expended by students in learning (their motivation as well as their actual work), the teaching materials, equipment and accommodation, all constitute resources. Regulations, size of class, the teacher’s level of training, Constraints national examinations and lack of, or inadequate, resources—in other words, the general conditions governing the institutional, social, cultural, economic or other environment-represent constraints. The way in which the teacher or the students employ the Strategy resources and fight against the constraints or turn them to advantage how, that is, they actually organize the various components defines the educational strategy. How students answer their teacher, their reactions, the reactions Feedback of parents or of his superiors provide the teacher with information and evaluation from which he can assess the
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results of his efforts and change his strategy where necessary. This return flow of information is called feedback. This feedback helps the teacher to check the various stages of his action and see whether he has obtained the desired results. This is the main function of written and oral tests. Evaluation is focused either on the students or on how far the action itself is conducive to the objectives pursued.

For example, a teacher may have altered her teaching style to allow a greater degree of student freedom within the classroom. However, parents might complain that their children are not receiving regular homework assignments, other teachers might complain that their students are less obedient in class periods following the reformed class session, and perhaps the community might become annoyed at the drop in standardized test scores (as these tests were probably more consistent with the old teaching method), the students might complain that they no longer know what is expected of them, and finally, administrators who might not appreciate the new method might penalize or fire the teacher. All in all, the innovation was probably doomed from the start, not because it was a non-productive idea, but because it did not use a systems theory approach. Because of the lack of synergy, this new teaching style reform would probably be short lived and the learning of students might actually decrease. Systems analysis requires a mapping of elements and their interrelationships within the system. The mapping of elements can be accomplished by exploring the research related to the various factors that affect learning. There are many elements that influence the learning of children in school. Boccock (1980) identified these levels of factors and the following list is indicative but not exhaustive of the factors involved:

1. The attributes of the individual child, such as family background, race, culture, gender, intelligence, achievement, motivation, personality, and learning style;
2. The qualities of the classroom, such as teacher expectancies, peer group influence, classroom climate, style of teaching and theories of learning;
3. The factors of the school itself, such as teacher-teacher and teacher-principal relationships, student-teacher ratio, availability of special services personnel (e.g. nurse, counselor, special teachers, aides, speech therapists), the school climate and environment, and even the type and quality of facilities in the school;
4. The interface between the school and the community, such as the composition of the school board, the nature of parental and volunteer involvement in the school, the involvement of businesses, the teacher union, and the degree of diversity within the community; and
5. The forces operating at the level of the state and national educational system, such as the effect of mass media on the popular image of what quality education means, national legislation affecting education, state and national policy regarding funding and requirements, and the types of learning resources distributed by the major publishing, software, and technology businesses.

This example of levels of factors influencing learning makes clear that the educational system has increasing levels of complexity beginning with the individual learner and expanding to include national influences. Therefore, looking at the interplay of the factors and understanding that the educational enterprise works as a system seems most useful in developing effective change.

Modifying the goals of the system is not easy, but it is also not impossible. In education, such change requires convincing all the major decision makers within the school system that the change in emphasis is desirable. Also, the change agent must persuade parents, students, and others in the local community that these changes will benefit themselves, as society needs to have graduates with certain qualities. Finally, the interventionist must convince the forces within the national educational system, such as the mass media, testing corporations, textbook publishers, government legislators, and funding sources, of the value of the change. The role of goals in a systems analysis is critical. The system uses its goals as a basis for assessing its performance. This process describes another aspect of systems. That is, a system seeks feedback on the quality of its functioning. For example, if society requires that high school graduates are competent in basic academic skills, then schools are going to place great emphasis on standardized
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achievement tests in these fields. Decisions regarding teaching methodology will be based on the degree to which the new method will produce students who score high on these tests. If, on the other hand, society indicates that schools to produce open minded, non-prejudiced graduates who desire to celebrate cultural differences, other types of attitudinal, behavioral, and cultural information tests will be created to assess these graduates, and schools will modify their teaching methods and curriculum to enhance the probability that their graduates will succeed on these measures. Thus, change will result by analyzing and altering the goals of education and then by bonding specific innovations and assessment instruments to these goals. Forums of national leaders have been called together to review goals. Various foundations and groups of professionals are hard at work creating their own set of stated goals. Curriculum/content groups have been working for years to reframe curriculum objectives based on their perceived goals. While many content groups are working on standards, there are really no overarching goals for the entire system. Nowadays there is a curriculum wars. Each of the many curriculum areas has their own goals, objectives, and learning approaches. In addition, they seem to be trying to establish the system's goals, or at least to have the system's goals include their agenda. That the objectives are growing and are not often interrelated and sometimes are in conflict causes problems.

The content area experts have their agenda for educational goals. Various groups (e.g. single parents, education advocates, family value advocates, health issue groups, particular ethnic groups, religious groups, etc.) in society want to have influence as well. In addition, there are major conflicting views. Others believe schools should foster student's personal development, self-awareness and confidence. Some see the school as the agency for helping the integration of all ethnic groups and to celebrate cultural differences. Finally, many see the goals of education, as preparing students to work and to be vocationally competent citizens in an emerging global market.

Importance of System Approach for Education
1. Framework for planning, decision making control and problem solving.
2. Throws light on dynamic nature of management.
3. Provides a unified focus to institutional efforts.
4. Helps to look at institution as a whole and not as parts.
5. Helps the manager to identify the critical sub systems and their interaction with each other.
6. Helps in improving institution.
7. Helps in bringing efficiency in school administration and management.
8. Helps in systematic educational planning.
10. Helps in improving examination and evaluation system.
11. Maintaining, controlling and improving the guidance services.
12. Designing, controlling and improving non-formal and adult education system.
14. In improving the teacher training programmes - in service as well as pre-service.

Views of socialization, goals of education, regulations, practices and activities within the community, school and classroom, outcomes assessments and personal/family values and beliefs interrelate in the total educational system. Unfortunately, the various elements of the system are not always consistent with each other. This dissipates the energy available to help children learn. Lining up the elements in a planned intervention, conceptualized from a systems perspective will increase the likelihood that the community will be focused on educating each child. If the elements are working together then, perhaps the Nigerian proverb that it takes a whole village to educate a child would be a reasonable hope.

References
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