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Marvin E. Duncan is a professor and direc-Winn, W.D. The role of diagrammatic for of the Learning Resources Center at sentation in learning sequences, worth Carolina Central University. fication and classification as a fun Ronald K. Bass is an associate professor in of verbal and spatial ability. Journal College of Dentistry at the University of Research in Science Teaching, in porida.

Change, whether planned or unplanned, usually brings with it confusion and discomfort. Planned change, however, results in less confusion and less discomfort while providing more efficiency and more productivity than unplanned change. In planned change, the initiator of the change idea has a thorough knowledge of the situation to be changed. The "real" problem and not simply symptoms of the problem are analyzed and clearly identified before attempts to change the problem situation are begun. Proposed changes must be developed and implemented, and an evaluation of these changes must be made in order to determine whether the organization functions more effectively and more efficiently than it functioned prior to the implementation of changes. The content of this paper is intended to be a guide to planning instructional change rather than a universal prescription for all change. It is the purpose of this paper to assist the reader in bringing about desired instructional changes by utilizing a systematic approach for making a smooth transition from the existing situation to the desired situation.

Identifying a Problem

It is paramount that the change agent ask and respond to two pertinent questions before attempting to bring about change. Both questions may be answered before a thorough identification of the problem is made, depending upon the knowledge the change initiator has of the client system. However, answers to both questions usually come about after problem identification. The first question which must be answered is, "Do I as change agent have some influence as to whether or not the situation will be changed?" If you have no influence in the situation, forget it! Continuation will bring only internal discomfort, mental frustration and anguish, or possibly dismissal. The second question is, "Am I concerned to the extent that I am willing to put forth the time and effort to bring the change idea into fruition?" If the answer to the latter question is yes, proceed. If the answer is no, stop fooling yourself since you are not committed to the proposed idea.

Ronald G. Havelock (1970, p. 12) writes that a successful change agent needs to develop a viable relationship with the client system prior to attempts at identifying the problem. A detailed description of the entire problem situation is not needed at this point. Rather, establishing a wholesome working relationship with those for whom the change is intended and with those who make decisions relative to the proposed change is a necessity. After the above has been accomplished proceed with identification of the problem. Care should be taken to avoid "finding a solution." This will more than likely result in the change agent reacting to symptoms rather than to the problem. The problem appears obvious in many situations. Usually, as Havelock (1970, p. 60) points out, the obvious is merely a symptom of the problem. Perhaps the most successful method of identifying the problem is by asking questions about the situation until common patterns among symptoms are recognized. Once the problem has been identified, determine the cause of the problem. Eliminating the cause means eliminating the problem. Consider the example below:

Your office mate comes into the office with wet clothing. The problem appears obvious. It is raining. However, the rain may not be the real problem. It may not be raining. Your office mate could have gotten wet by:

1) walking under a sprinkler system.

2) walking too closely to a vehicle using water to clean the streets or

3) being doused with water by an individual

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using a water hose to wash a car. By asking questions as to "Why are you wet?" You may soon eliminate points one, two and three as possible causes. You may find that it is really raining. Right? ... Wrong!! Again the observer is not accurate. In this situation, wet clothing is "a problem" but not the "real problem." The rain made the clothing wet. The question is "Why did the rain penetrate the clothing?" The problem is that your office mate was outside while it was raining without an umbrella or adequate protection from the rain, and therefore got wet.

To eliminate this problem in the future, your office mate should have an umbrella or other protection when outside in the rain.

Problem Situation

After identifying the problem, the next task is to study the environment in which the problem is lodged. This suggests a careful study of the organization, including the possible constraints imposed by the organization and the positive aspects of the organization. There may be factors or forces which surround the problem which need to be considered if the problem is to be resolved. Watson and Glaser (1965, p. 36) assert that whoever provides the leadership for change, whether the person is inside or outside the organization, should be aware of the complex forces working for and against change. These forces, as Lippitt (1969, pp. 158+) notes, are referred to as driving forces, restraining forces and neutral forces. Driving forces are those forces which facilitate change or which enable change to occur with minimal difficulty, providing they are of sufficient strength and intensity. Restraining forces are those which hinder change. Neutral forces are those which neither foster or impede change but which could, if altered, serve as either driving or restraining forces depending upon the direction of the alteration.

You may wish to make a list of the forces (i.e., driving, restraining and neutral) as you perceive them. Reduce the list to those forces you consider relevant. The reduced list may point out two or three driving forces and perhaps two or three restraining forces which are distinct and prominent. Decide which forces you can change and list possible actions you can take which would reduce or completely eliminate the restraining forces, i.e., the dominant ones. List possible actions which can increase the effects of the driving forces and change neutral forces into driving forces.

The change agent must consider the magnitude of the proposed change. Magnitude relates directly to the level of financial and other administrative support required as well as to whether or not the proposed changes are within the purview of the change initiator. Altering a unit in a college course does not require the level of support required for revising an entire course. The decision to revise an entire course is seldom, if ever, left solely to the teacher. Adding a course to a curriculum is usually a decision made by the head of the administrative unit rather than the person who is to teach the course. Consider the following:

Department X at School Y is undergoing curriculum revisions. Program A in the department has gained more publicity than other programs within the department. The strategy to be employed by the department in solving instructional problems is the concept of mastery learning. The director of Program A and his staff worked diligently to rewrite course outlines to include explicit objectives, practice exercises, diagnostic quizzes, feedback, and criterion measures for assessment purposes. They also matched media

with course objectives. The director of A gram A and his staff recommended to chairman of the department during the demic year that:

1) A learning center be set up to house m and nonprint materials.

2) A full-time person be employed to dis the learning center.

3) A variety of media be procured basel 4) Timing is an important factor. It should their matching of media with objects

4) One staff member be given release time continue revision efforts after im mentation.

Two months have passed since the rea mendations were made. The director of cluded that since the chairman of the dep ment has not responded to the recommen tions, he is against the change idea. director decides to visit central adminis tion (by-passing the chairman) for supp The director informs the administration he has little if any support from the ch

The director of Program A and his s mental level may have hindered prog idea has been fully implemented.

man's initial reactions. 2) In his efforts to increase the driving frengthen the restraining forces such that assuming that the administration whe proposed change becomes almost imposdriving force, the director may have ble to implement. ally reduced the effects of the dr forces since he by-passed the chair (violated the "chain of command"). valuation

3) Curriculum revision of such magn The proposed changes cannot be evalu-

requires both vertical and horizontal support. Horizontal support may be evidenced by the staff's apparent willingness to cooperate. Vertical support, i.e., chairman and central administration, become increasingly important as the size of the development effort grows.

be remembered that change must be instituted in the right place, at the right time, and proper dosage. The director should have received a response from the chairman after two months, at least to the extent of acknowledging receipt of the prospectus outlining the proposed changes. However, it may be unreasonable to expect funds for full scale implementation within a period of two months. Although the recommendations were made during the academic year, funds for a fiscal year are usually allocated and earmarked for disbursement prior to the year in which major expenditures are made. Even when although having a clear perception of whe recommendations are approved during a to be done with respect to curriculum given academic yaer, funds for full scale sion, may have their efforts thwarted f implementation still may not be available variety of reasons, among which may be the next year. An alternative approach 1) Inadequate and ineffective commun should this happen would be to institute tion about the revisions at the de the changes one at a time until the change

This communication should re, The director's perception of forces within advantages, cost and needed personnhe organization may be accurate. However. in written form, it should be written is course of action is not recommended. prospectus. This is a "feeler stage ometimes efforts to strengthen driving which the director is seeking the corces actually neutralize or change these prces into restraining forces. This may also

ated at this time since the changes have not been implemented. However, evaluation should point out the difference between "what was" and "what is." In evaluating the proposed changes, the director and his staff

1) Compare revised course outlines with course outlines prior to revisions to determine if objectives are included and if they are explicit.

2) Ascertain if content materials relate directly to performances specified in the objectives.

3) Determine if appropriate learning exercises have been included.

4) Check to see if diagnostic quizzes and feedback have been incorporated into the revision.

5) Resolve if media are appropriately selected and used.

6) Review test items to see if they relate directly to performances specified in course objectives.

7) Monitor work of staff person who was given released time to determine if development efforts are continued.

8) Ascertain if students are having less difficulty in mastering course materials after revisions than before revisions; gather statistical data in support of learner out-

9) Determine the extent to which the resources in the Learning Centre facilitate learning, i.e., accessibility, proximity, relevancy.

Commentary

Planned change is the process of altering an organization from its present state to an idealistic or futuristic state. It is a most difficult process. Change will occur, however, whether planned or unplanned. Our responsibility as educators is to plan for change in the direction of more efficient and more permanent learning. The suggestions and examples included here are to be considered only as a guide. There is no recipe for planned change which can be used to guarantee success in every situation. It is recommended that when planning change, a pattern of open communication be established and maintained; and that trust be developed between and among members of the organization in order to create an open atmosphere of shared responsibility.

There is more to planning instructional change than presented here. We have simply presented some of the intricacies of the planning process. However, we are aware, as Haney and Ullmer observed that to say what something is about is not necessarily to say all there is to be said about it.

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