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A CONCEPT AND FEASIBILITY STUDY OF A CITIZEN CIVIL PREPAREDNESS EDUCATIONAL PROGRAM

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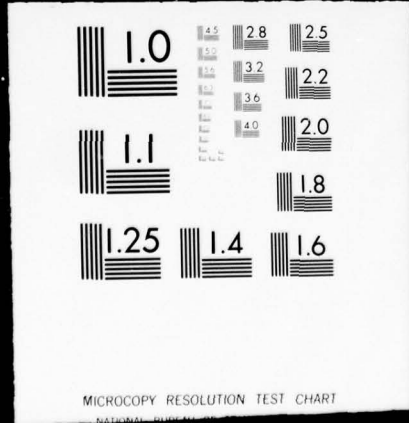
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A CONCEPT AND FEASIBILITY
ANALYSIS OF A CITIZEN
CIVIL PREPAREDNESS EDUCATIONAL
PROGRAM

FINAL REPORT

by

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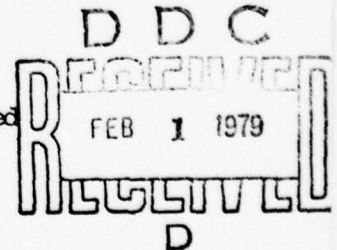
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This study is concerned with the analysis of the concept of a civil preparedness public education program and an analysis of the feasibility of designing and developing such a program.

Carrying out these analyses required the following steps:

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- Defining public education as well as its functions during peacetime, crisis-expectancy and crisis-activated time periods

- Describing its function as part of the civil preparedness effort

- Designing a procedure to develop a public education program

- Conceptually deriving and organizing those behaviors which need to be produced by a public education program at specific times for specific target groups

- Developing the basis for the curriculum necessary for such a program

- Analyzing the means to instructionally implement the future curriculum by balancing the effectiveness of that means against its cost

- Examining the system by which a public education program could be infused into the organizations and institutions closest to the lived world of the target group

- Describing those organizations and institutions to determine the feasibility of delivering a civil preparedness public education program

The results of these procedures are a sound basis for the development of educational resources and the curriculum materials that constitute public education programs. Moreover, the cost benefit analysis provides specific and immediately useful ways to put the program in a form available for target group use. The organizations and institutions which make up the target group's diversity were analyzed. The most feasible institutions for delivering a public education program were first considered. These included institutions having a strong corporate identity and a scope that was national. However, a variety of means (primarily variations on the multiplier effect) to deliver programs to smaller, less organized institutions were also examined.

Executive Summary

The concept and feasibility analysis of the citizen preparedness public education program is dependent upon a crucial idea: the availability of time. Public education, as we have defined it, requires time and a desire to learn in order to be successful. During peacetime, the majority of the population is not interested in learning what is needed to survive nuclear attack.* It is during a period of expectancy--that is, when it is clear that nuclear warfare may actually occur--that the hunger for learning will reach a fever pitch. It is at this point that the Defense Civil Preparedness Agency's (DCPA's) public education program can be most effective. At the appropriate time, the organizations that represent or express the values of the target groups could have programs already integrated into their educative operations and put into continuous utilization. The time span of the expectancy period would allow for the functioning of the public education program.

During the actual crisis, when emergency procedures are activated, events will be rapid and the time available short; therefore, only instructions, or information would be effective. Needless to say, there may be periods of time which provide for the possibility of education.

Much of the educational effort will be carried out by civic and socially-concerned organizations and individuals. A variety of these organizations will provide the parameters of a society-wide educative process. These formal

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*Despite this, peacetime is the proper time to develop community leadership able to take responsibility for public education during a period of crisis expectancy.

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and informal educating organizations, and self-identified individuals with already existing skills will provide civilian leadership and instruction for survival. These skills would be continuously upgraded by new educational efforts during the crisis expectancy period and whenever feasible during crisis activation.

We describe the functional relationships of target groups and the time periods. We show the educative role of the public education program as it is utilized by the society's organizations and institutions. However, the content for such a program needs to be described, so that its feasibility can be determined. Thsu, we develop specifications for the behaviors required and the curriculum that should be taught to reach competencies of skill which would assure survival during nuclear attack. Further, we spell out the behaviors needed and curriculum specifications required, and logically distribute those skills (which are function-related) over periods of time for the target-groups. A final derivation of the behaviors required for social as well as personal survival are examples of the curriculum content which could be developed into materials and resources for use by a public education program.

A variety of formats and technologies that could provide the means is examined from a cost-benefit perspective. The model for carrying this examination out is presented and an appendix showing a practical application of this analysis appears at the end of the report (see Appendix B). A wide range of the means to mediate* the exemplified content is ranked according to criteria of production, distribution and usability for the competency levels defined for use in the curriculum specifications and the curriculum model. The target groups are differentiated from each other only according to size.

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* convey content to the learner through a chosen medium or media.

These target groups are qualitatively defined in our study of the organizational feasibility of the public education program. Educating the public requires a macro-societal conception of education: that is, a conception of education that includes both the formal and informal institutions that educate various strata of society.

We examine, then, the organizational arrangements and the procedures necessary to make a public education program part of the educational effort of the society's educational organizations. We call such arrangements and procedures a delivery system and provide a detailed description of it.

Finally, we examine the social and underlying structural variables of the target group's organizations and how DCPA could impact different kinds of organizations.

These constraints and potential courses for development define the feasibility of the concept of public education.

A Concept and Feasibility Analysis
of a
Citizen Civil Preparedness Educational Program

TABLE OF CONTENTS

INTRODUCTION

The Structure of the Report

This Final Report represents an analysis and definition of the public education program (PEP) of the Defense Civil Preparedness Agency (DCPA). This analysis will also show the feasibility of developing a public education program.

At the outset, we may roughly define public education by distinguishing it from public information. Public information provides certain messages that are judged useful to convey to the public. Such information would be instructions or directives on what to do. Public education on the other hand is intended to create an intelligent self-directing response from the target groups in their situation; this, therefore, requires more time and more elaborate delivery approaches.

What we have accomplished here is to present a logical progression of steps toward forming the basis of programs that could be used to satisfy a range of alternative public education needs. The end product of these steps is not so rigidly defined that alternative curricula could not be developed for different needs. The progression described here is an open system that could incorporate new information and knowledge without altering the structure of the approach.

Our starting point was the information/knowledge base developed or described in DCPA documents. Within this base are descriptions of various behaviors required by the various target groups at different times related to the period before and after a nuclear attack. These behaviors were abstracted to the same level of detail; that is, as outcome goals. They were categorized as technical competency, life skills competency, and group inter-action competency domains. These categories were then distributed as unified

clusters along the axes of time periods and target groups. The domains are further analyzed into attitudes, knowledge and skills. This enables us to identify the kinds of behaviors needed to be exhibited as outputs if appropriate action is to be taken by a group of people in a disaster situation.

Once this was established, the behavioral goals were refined and analyzed further into competency levels. Thus, in the next stage, the behaviors listed under the three behavior domains (life skills, group interaction, technical skills), were further analyzed into four competency levels that would be produced by the curriculum program delivered to the target group. The range of levels would be produced by an interface of target group motivation and public education effort. Roughly, the least effort made will produce the lowest competency level (orientation) and in like manner the most developed curriculum delivered would produce the highest competency level. This shows the specifications that need to be fulfilled by the DCPA public education program.

The levels were developed from the behavior model by using the following definitions:

Orientation -   Concepts are introduced, tasks are described or
                     demonstrated. The learner is able to understand the
                     basic concepts and the purpose or function of the
                     skills, but may not be able to perform the tasks.

Familiarization -   Concepts are reinforced and further developed. The
                     learner can actively participate or practice skills
                     only under close supervision or detailed instruction.

Low Proficiency -   Competence is further developed, learner is given
                     repeated practice and can perform tasks with few gross
                     errors if given some supervision or adequate job aids.

High Proficiency-   Learner can perform tasks efficienctly, with no errors.
                     He/she can assist others in developing their knowledge
                     and skills.

These definitions suggest that the levels describe behaviors/attitudes that at the lowest level are passive--merely information absorbing. At the top of the competency range is the most active--the learner is highly educated in the knowledge/skill area and is able to educate other learners. Between these are two other levels that fill in the gap between these two parameters. Low proficiency is a level that is directly paired with high proficiency. They both involve individuals acting. However, those of high proficiency would be developing other learners to bring them at least to the low proficiency level.

Once these levels were defined, they were arrayed in a curriculum model such that they could be related to the survival of a target group at a particular time. The curriculum submodel included here shows that relationship for the technical competency domain. The other competency domains will be relevant at all periods at the highest levels possible. Hence, no submodel for these competencies was necessary.

As a further development, a sample of competencies was developed as to their content parameters. From these parameters, specific behavioral objectives have been derived in terms of giving an observer of behaviors criteria as to whether a level has been attained. The criteria for meeting a level provide a specific device for determining whether the learner has attained measurable specifications for his/her level.

Given these samples of the curriculum content, we are able to discuss the means by which such content can be mediated. Such means are discussed in terms of their ability to effectively create necessary skills and attitudes in populations of various sizes.

Size, however, is not enough of a variable to determine the distribution of public education. There are complex societal and organizational structures that need to be impacted. The final chapter discusses these issues at length.

Our project has produced an analysis-based specification of the curriculum

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requirements for the development of a public education program for DCPA. The chart that follows depicts this process. Steps beyond the scope of the present project are indicated as "not developed."

Stages of Analysis to Determine the Curriculum Requirements
for DCPA's Public Education Program
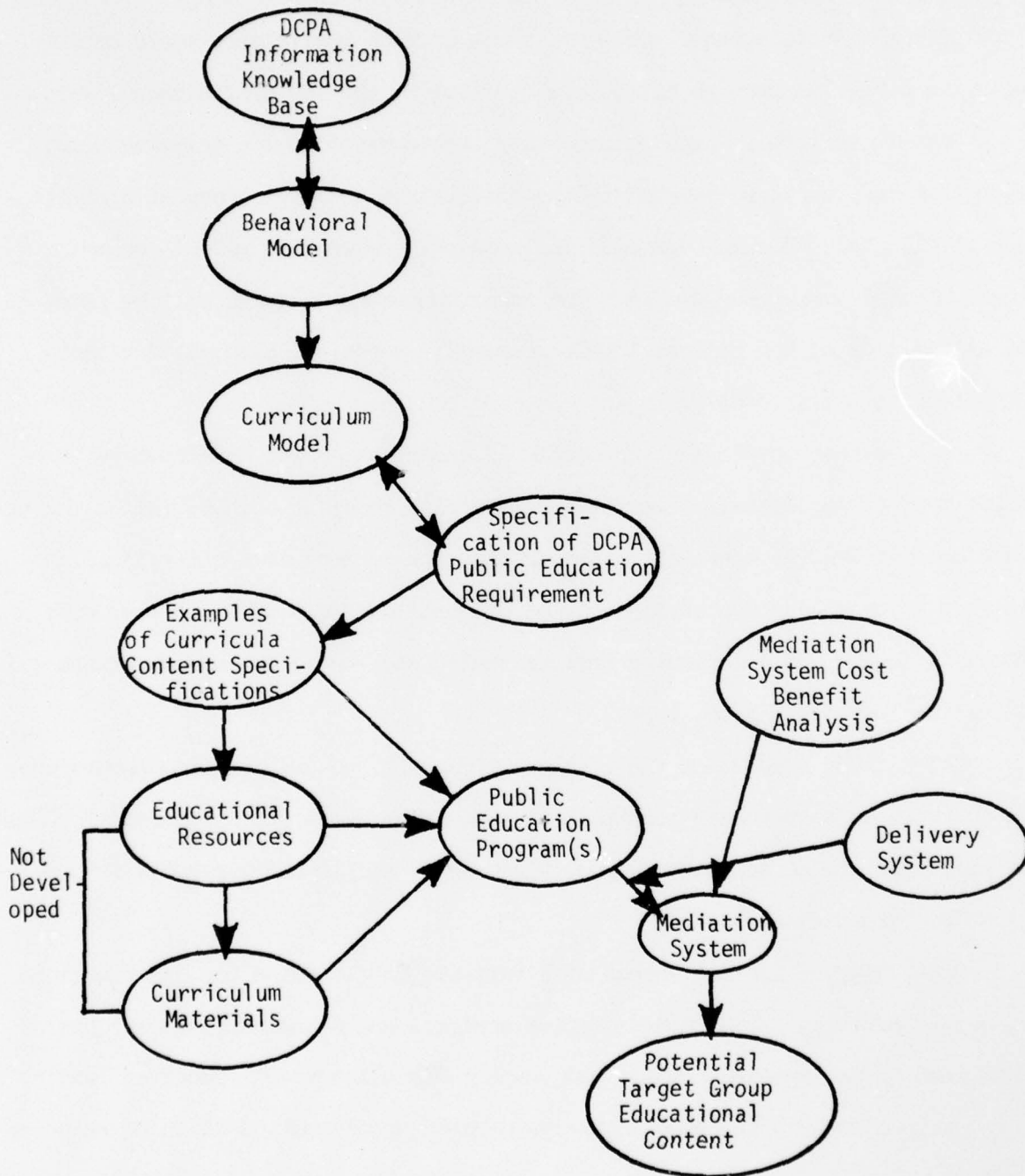
The steps that we have taken in this project as a whole occur within a larger context. This interrelationship is displayed on this page as part of the systems complex of DCPA. The four circles describe the areas attended to by the present report. Other circles are being carried out or developed by DCPA (e.g. the training of civil preparedness coordinators), while other circles describe the output of DCPA's efforts (e.g. a prepared target population).

The Systems Complex of Civil Preparedness Training and Education

Psychosocial framework--the ideal of Crisis Relocation Plan, Reception/Care

Conceptual model of desired state of civil preparedness

Models for civil preparedness programs

generic model for DCPA

Leadership development domain of civil preparedness

Public education domain of civil preparedness

generic model for PEP

Behavioral model of knowledge, skills, and attitudes relevant to leadership development in civil preparedness

Behavioral model of knowledge, skills, and attitudes relevant to public education in civil preparedness

PEP's target groups grid for peacetime and crisis activated situation

Civil preparedness coordinators and local chief executive in relation to local media and communications

DCPA National Training Organization

National state, and local organizations collaborating in DCPA efforts

Systems for the acquisition and development of civil preparedness curriculum

Communication networks and delivery systems

Systems for the development of a dissemination staff

Prepared target population

Instructional and learning systems that implement civil preparedness

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CHAPTER 1

The Role of DCPA's Public Education Program
in Periods of Peacetime, Crisis Expectancy and
Crisis Activation

Planning a public education program (PEP) for DCPA has a number of aspects that are functionally interrelated. The first aspect is to gain knowledge of the environment that needs to be affected through research and analysis of existing literature. Socio-cultural studies must isolate in broad terms the potential responsiveness of social groups in PEP's system-environment. Also, planners for PEP must consider the technical nature of the system-environment's problems and needs that would affect or drastically alter that environment in order to develop a set of hypothetical responses to those potential problems. In the case of DCPA's public education program, such problems and needs revolve around preparing and having contingency plans for natural disasters and for nuclear disasters. Most likely, nuclear war would take place after a relatively long period of political tension. Thus, there is a crucial time period for educating the public.

We may define public education as an extensive instructional effort that could change attitudes, generate or upgrade skills, and create new knowledge for a wide range of people extending through the whole of society. The means for carrying out such an effort are discussed in Chapters 6 and 7 of the present report. Such means would take place within a macro-societal education framework, and would utilize multiplier effects through the complex of formal and informal educational systems of society.

In this chapter and the next, we will present the public education program as it relates functionally to a course of events leading to a nuclear disaster.

We have organized these events into three time-periods: peacetime, crisis-expectancy and crisis-activation. Public education will function quite differently in each time-period, with the differences being dictated by the length of time and the presence of appropriate public attitudes required for the public education program to be effective.

Public education during peacetime will be low-profile but extensive in its scope of impact. However, it will be reaching many target groups who have a realistic attitude toward the potential for nuclear war. Members of these groups may become instructors or facilitators during the next period of crisis-expectancy. Hence, public education during peacetime will create a relatively small body of highly skilled people who would facilitate the multiplier effect.

One might assume that such people would belong to organizations whose interests are related to helping, assisting, and educating others with regard to nuclear war. Relationships with these organizations would be developed during peacetime. Such relationships would include negotiations necessary to develop the organizational arrangements to infuse* a public education program into their system.

In the next period, crisis-expectancy, an increasing majority of the population will be keenly aware of the potential for nuclear war. The time necessary for an effective program is still available. The process of infusing this program into a wider variety of organizations will become simpler and quicker. The people already instructed in the appropriate skills to a high competency level will have a large audience to instruct. The time allowed will enable the public education effort to involve a majority of educational organizations and institutions in society.

When nuclear war becomes imminent, whatever plans the government has developed for responding to the crisis will be activated. This moment is

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*integrate into an already-existing program.

referred to as the "surge" period. Such a period would have a time-span of one to two weeks.* Public education, requiring a relatively longer period of time to be effective will be superseded by public information and governmental directives. Information does not attempt to educate anyone by creating new skills or altering attitudes. Information is short-term and specific. It directs the population to follow an order (i.e. prepare for evacuation, or take shelter). There may be respites in this crisis-activated period when more elaborate educational packages might be disseminated. However, because the educational process requires a good deal of time to unfold we might be accurate in saying that PEP will function primarily during peacetime and crisis-expectant time periods.

The desired responses to emergency described in the literature have been analyzed for their behavioral characteristics as categories of knowledge, technical skills, attitudes and group interaction skills. These categories are related to each other in a behavioral model, and in a generic map of public education curriculum content areas.

Such a nexus of relationships is necessary to provide a rational overview for developing perspectives on future needs and to make certain that present needs are being satisfied in the most economical way. An image of needs linked with general (goal-level) content areas would be the following:

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*R. J. Sullivan, <u>Candidate U. S. Civil Defense Programs</u>, System Planning Corporation, Draft of 31 October, 1977, p. 5.

Figure 1
DCPA Public Education Curriculum Map
For Both Natural and Nuclear Disaster*
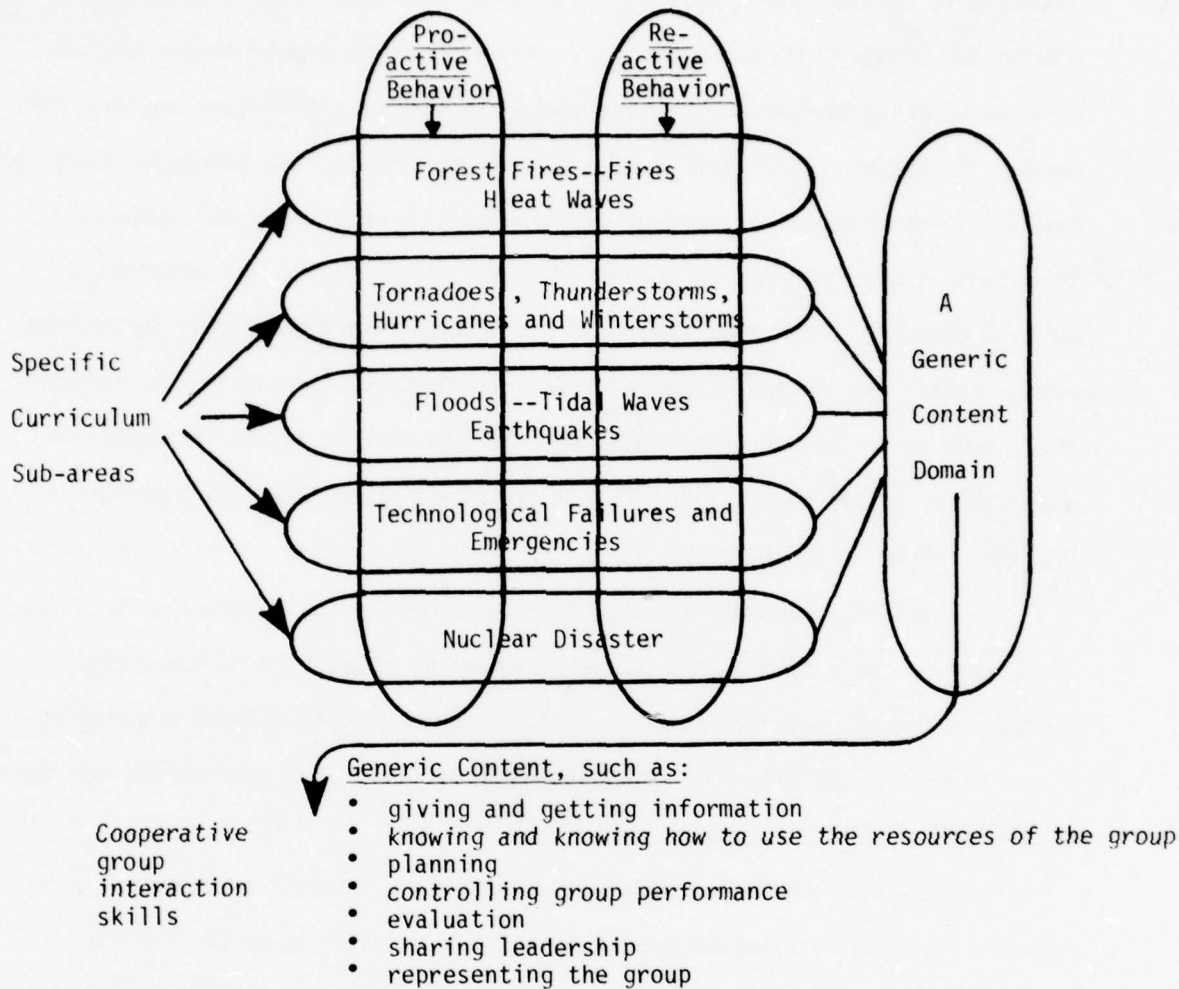
This depicts a logical picture or map of goals-curriculum interrelation-
ships. This picture is not yet a generic model; there is no <u>dynamic</u> descrip-
tion of the relationship of components which would produce needed change. To

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*This curriculum map depicts all the potential situations to which civil
preparedness should relate. However, there is a division of labor between
the federal and state levels regarding natural and nuclear war planning.
Planning for and educating the public in safety measures during a natural
disaster is largely a problem for state and local officials. The respon-
sibility for doing the same in the event of nuclear war is the DCPA's.
This map does not take this division into account.

1.4

achieve that, the above map would have to be synthesized with a task-environment and a governmental structure with their special needs, conflicts, purposes and values. These values and purposes are expressed in concrete terms of a task-environment made up of a system of target groups, organizations, institutions and individuals. Moreover, the means for approaching, affecting and evaluating this environment is expressed in terms of the governmental machinery, information routes, feedback, and the plans for guiding the present environment to a future ideal model of responses to ensure survival. The generic model would thus constitute not only a general synthesis of purpose, approaches and environment-to-be-changed, but would also provide a systematic basis for peace-time training programs in civil defense as it relates to crisis-expectancy and crisis-activated periods.

Such a model would show that public education within the administrative restraints of the DCPA would distribute materials appropriately developed for the type of mediation needed for a specified target group. These materials would also be constrained in their development by the model for ideal disaster behavior and the goals/curriculum map. Other relationships would include a continuous flow of information concerning the shifting needs and constituencies of the task-environment and the policy changes of DCPA.

In contrast to the model of disaster behavior discussed later in this chapter, this generic model is not related in any way to time. We have, however, some idea of how relationships could change as a crisis actually approaches. Enormous pressures will be placed on local communications and local civil preparedness officials and community leaders and they need to be ready for this. Information will flow more directly from DCPA, or some other centralized source to local authorities who will directly impact the target groups. Without PEP's

1.5

development of competencies during the peacetime and crisis expectancy period, the effectiveness of crisis-activated instructions and training might be quite different.

Not only would these organizational relationships change during a period, but the same target groups may be lumped together with another group needing education as a whole. These potentialities are included in the generic model on the following page (Figure 2). The potential crisis situation is included as a subsystem constraining the relationship of PEP to its future crisis environment. It is labeled in Figure 2 as a "potential psychosocial model." These potential plans would be constantly revised with relation to information and feedback from the present pre-crisis environment and DCPA plans.

Summary

In this chapter, we described in general terms time periods of peace, crisis-expectancy and crisis-activated periods. The descriptions provided the functional operations that would be undertaken by DCPA and its public education program.

With these general considerations taken into account, we may now begin to consider empirical studies done of the environment and other components of the generic model. This will be taken up in the next chapter.

1.6

Figure 2

future task-environment

behavioral model of disaster behavior

a functional model of a potential crisis environment & communication system

formal training & education

communication systems

feedback

information

information

feedback

TAE curriculum map

DCPA T&E

DCPA PEP

public education curriculum map

information

information

formal training & education

communication systems

feedback

feedback

peacetime period (actual)	crisis-expectation & activated periods (potential)

Peacetime Behavioral Model

Environment Target Groups

present task-environment

1.7

CHAPTER 2

A Functional Definition of DCPA's
Public Education Program

The definition of PEP is examined in this chapter in terms of its functional relationship to the behavioral development of an individual, to the increasing complexity of events, and to the various possible decisions made by the government. The information as to these relationships is presented in summary form in Section A's discussion of the task-environment. The specific components and their functions are described and displayed in Section B.

I. Task-environment of DCPA's Public Education Program

Most of the literature describing scenarios and functional structures for ideal disaster behavior assumes that during the pre-crisis period the American population is interested in civil preparedness education. Two studies by Jiri Nehnevajsa of the University of Pittsburgh* support this assertion.

Nehnevajsa states in his discussion of the 1972 survey conducted by a Census Bureau Survey for ACTION that 54.2 percent of the respondents in the 1972 national study would "definitely" or "probably" volunteer for civil defense. The percentage of definite commitments to volunteering (17.2) compares

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*Jiri Nehnevajsa, "Volunteering for Civil Defense: Insights from a 1972 Survey," University of Pittsburgh, University Center for Urban Research, April, 1976; and "Crisis Relocation: Perspectives of Americans," Department of Sociology, University of Pittsburgh, January, 1975.

favorably with a study done by John R. Christiansen* which concluded that 13 percent in Colorado Springs would definitely volunteer their property to civil defense. Most other figures in the Nehnevajsa study and the Christiansen study are comparable.

Nehnevajsa's attitudinal study on Americans' response to crisis relocation** also suggests that the environment may be more complex with regard to responding to crisis-relocation plans. One might conclude that while vast majorities are not enthusiastic about either volunteering or evacuation, they are at least receptive to civil preparedness education.

Both studies suggest that the target groups with the most potential for peacetime instruction are:

- women;

- people with high school education and some college;

- working class people;

- people who are more religious than average;

- people who have been exposed to disasters, especially war; and

- people who perceive the tensions in international relations.

The difficulty with these studies is that volunteering and evaluation are put in terms of a specific, concrete, felt need. Whether their response will be favorable to a public education program without such a need is difficult to determine. In the presence of only a general need for preparation, the responses may be quite different.

The assumption is that for public education to work, a good deal of time

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*John R. Christiansen, Field Testing Procedures for Using Home Basement Shelters as Group Shelters (Phase II), Brigham Young University, September, 1975, p. 50.

**Jiri Nehnevajsa, 1975, Op. Cit, pp. 14-17.

and public need is required. The time and the need occur during a period of crisis expectancy. Individuals with leadership qualities and organizations with educative functions will require programs to educate these target groups, who will, in turn educate other members of society.

Another aspect of the environment that needs to be examined is the accepted society-level institutions and organizations. These organizations would be sought out so that public education programs could be infused into them that would mediate a curriculum aimed at the community.*

Moreover, this knowledge of societal institutions would be passed on back to the DCPA's training and education wing to inform potential local civil preparedness coordinators about these channels. In this way, local government officials would have access to useful educational systems in case the need arose. This process would help fulfill the statement in "Standards for Civil Preparedness"** that part of the duties of local civil preparedness directors and local chief executives is to have this knowledge concerning local news media, or other public information systems (e.g. a local warning system).

Thus, these communications systems are essential as a target group for DCPA's training and education effort during the pre-crisis period. As a target group, communications should be treated by DCPA's public education program as a partner in disseminating education about civil preparedness.

We might further delineate the societal institutions in the following way:

● Formal education systems--school systems on all levels;

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*The "community" of course, covers a range from the national level to the smallest socio-political unit.

**DCPA, "Standards for Civil Preparedness," December, 1972; pp. 33-36.

- informal education systems--Boy Scouts, 4-H clubs, Red Cross and other civic organizations,* and

- popular media--T.V., radio, etc.

Some of the educational and instructional organizations listed here have a degree of goal overlap with DCPA that would provide a basis for linkages between PEP and those service organizations (Boy Scouts, 4-H).

The operational difference in the two situations, peacetime and crisis-activated, appears to center on the type and quality of communication: the one, educational; the other, mandatory instruction. However, even in the crisis-activated period PEP will have some role. PEP messages will cover any gaps in the target groups left by the local EOC, or by others. Part of the communication process will be a refinement of the undifferentiated target groups of "evacuees," "host," "refusers" into delineated groups who would be educated by a variety of instructional systems. While PEP looks for the most effective way of educating the population by being sensitive to social/political/cultural characteristics, it must also have a projection of what those target groups would be during crisis expectancy, and, in particular, during the surge period, we have developed a model (described in Chapter 3) which would provide such a projection of future behavior. Those behaviors are projections for ideal survival techniques for time-frames and target groups.

At the intersection of these target-group categories and time-frames, a behavioral model of knowledge, skills, attitudes and group interaction skills occupies the space. In those categories goal-level desirable behaviors and competencies could be recorded. In this way the target group, time period, and ideal disaster behavior would be integrated.

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*Bela Banathy, James M. Patton, William Roberts, "A Study of External Training Settings Available to Diffuse Civil Preparedness Public Instruction," Final Report, Far West Laboratory for Educational Research and Development, September, 1975, passim.

II. The Functional role of the Public Education Program during Crisis
     Expectancy and Crisis periods

The most general category to be targeted by DCPA's public education pro-
gram is the American population as a whole. Easily the most efficient and
effective means of reaching all these people is through the most widely dis-
tributed and socially accepted institutions and organizations. Hence, one of
the initial tasks of the public education effort will be to infuse public ed-
ucation programs into these systems. Moreover, since these systems have to be
sensitive to the population's changing values and constituencies, the systems
are variegated according to the population's complex psychosocial profile.
Specific segments of the population can virtually be identified by observing a
given system's effective relationships. Thus, the category of "population"
may be broken down into national, regional, and local audiences living in urban,
suburban, exurban, and rural environments that are informed by audio, video,
graphics, film, or the printed word. This population also includes formal and
informal educational systems that have their own constituencies and communica-
tions networks. The relationship of PEP and these target communications and
educational systems in peacetime would be a partnership involving the communi-
ty's needs and PEP's institutional constraints as well as the constraints
attending the various communications networks. This partnership has to be
achieved through the development of procedures and organizational arrangements
permitting the infusion of DCPA's program.

PEP's educational efforts through the various target communications sys-
tems during peacetime would consist of raising target group competencies to
the highest possible level.

The literature distinguishes between two general crisis plans: (1) on-
site, sheltering, and (2) mass evacuation, which is an option to complement
plans and capabilities of the in-place blast shelter protection. The

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factor that generates these plans is the length of the warning period for preparing for an emergency. It seems clear that a nuclear attack will be the culmination of a period of crisis expectation, called a "surge" period thus providing some time for preparation.*

PEP's efforts in each case will be quite different. In the short-warning-period case (the "Alfa" case), constant reiteration of safety precautions would comprise the extent of the effort. Most of the reliance for public safety would be in the hands of local firefighting, police, and traffic control.** The long-warning-period (the "Bravo" case) is more complex because it involves the orderly transportation of large populations over a long distance to an area that must receive and care for this large population for a long period of time.

A category that needs to be addressed is the evacuation refusers. This is expected to be a very small number.*** Special attempts must be made to

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*Defense Civil Preparedness Agency, Guide for Crisis Relocation Contingency Planning, Part IV: Risk Area Planning, pp. 1-4 to 1-8 and R. J. Sullivan, Candidate U. S. Civil Defense Programs, October 31, 1977 draft, p. 5. Sullivan provides a functional definition of a surge period, p. 20. A draft by William K. Chipman of a crisis scenario also provides a depiction of events prior to and after an announcement by the President of imment danger: the start of the "surge." Sullivan's depiction of the surge is as follows:

Regarding the surge period, there are three times which must be distinguished:

t_1 = the time at which the President orders the beginning of the surge

t_2 = the time at which he orders the population to execute the CD posture (i.e., either to evacuate or to take shelter)

t_3 = the time of attack.

It is assumed that at least 1 week occurs between t_1 and t_2. The time between t_2 and t_3 may be minutes, hours, or days; and the President's decision at t_2 would evidently be a strong function of his estimate of this time interval.

**Ibid, pp. 1-6, 7.

***Jiri Nehnevajsa, CRP: Some Aspects of Credibility and Public Acceptance, Civil Defense Workshop, 3 November 1977 draft, pp. 10-11.

get these individuals to voluntarily follow the evacuation and to keep them posted as to the status of the crisis. These attempts should be continuous throughout the crisis period.

The descriptive planning literature shows that the flow of public information shifts during a crisis from the community to a centralized, governmentally-controlled communications system. However, an alternative view would show that state/local governments would take the initiative in reacting to crisis.* We might show these developments with regard to two broad target groups: (1) persons to be evacuated from high-risk areas and (2) persons to be receiving evacuees in low-risk host areas. The two situations are depicted respectively in Figures 3 and 4.

It should be stressed that special groups of self-identified individuals may be highly advanced in emergency related skills. These persons would provide leadership during crisis periods. One may expect that these leaders would be at a higher proficiency level than the general population at any given time. The learning process for these individuals is much more rapid because many of the required skills and attitudes already exist in them. Hence, there is a willingness to learn, and a willingness to teach those skills to the rest of the population. That idea must be kept in mind as these charts are scanned.

At the top of the following figures there is a sequence of events beginning at peacetime, moving through a crisis expectation period into a very extreme situation (the surge period) and then leveling off into a denouement.

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*See William K. Chipman's Crisis Scenario, Draft, October 6, 1977, nonpaginated. (See 5-40 through 5-1).

Such a time flow is descriptive of any sort of long-term crisis that necessitates mass evacuation and care and reception.

Below this event-line is a depiction of the functions relating the behavior of a hypothetical person to a civil preparedness education/ information flow. These functions and interrelationships are not described as happening in time. However, as the crisis increases in severity, these flows of information and information demands become more causally responsive to the sequence of events.

The effect of all of this public information is shown in the squares that coincide with our behavioral model (see Chapter 3). These effects are shown only on the level of behavioral goals.

At the bottom of the figures is a description of potential government decisions activating and utilizing PEP through various societal institutions, individual community leaders and other facilitators.

Here we assume that such objectives can be specified and, further, that during the crisis, appropriate curriculum packages have been developed and delivered to educational organizations so that we may expect that the person is increasing his/her knowledge and skills.

These figures end at the point where the evacuees have left the high-risk areas and have received some immediate attention and distribution among host-area residents. The next representation (Figure 5) is of the relocation and continued care of the evacuees.

There are two possible situations for shelter. After the relocation described above, there may be a shelter period (called "Bravo"). There is the situation where on-site shelter, without evacuation or with only partial evacuation may be a necessity. Despite the speed of events, public education

Figure 3

Bravo Case

Long-Term
Crisis

EVACUEE

Constant feedback &
on site personnel
observations provide
DCPA decision makers
with information to
apply further, or
alternative plans

State Executive Control;
all communications
coordinated

EPI

CRP PLANS ACTIVATED

Education programs, modules
for group interaction skills,
attitudes applied step-wise
in response to need along
with other plans being put
into operation.

(transportation, food
distribution, medical
care etc.)

Levels of

Competency

are Products

of a Specific

Curriculum

LC	A	K + S
GIS	A	K + S
TS	A	K + S

COMPETENCY
DOMAINS

Local CD Coordinators
& other CD personnel

feedback

Information &

demand for information

Government begins flow
of emergency CD information,
resources etc.

To prepare population for possible
CRP. CRP must be couched in terms
of possible Presidential action only.
Other possible. Other possible
shelters should be sought.

Information dissemination shifts
from a response mode to Public
Education.

Government
Activities

A
K
S
GIS

apprehension

with DCPA interface functions

Person (evacuee)

(time)

Peacetime   Crisis Expectation   Crisis activated (surge)   relocation   (attack; no attack)

possible return

Events

Sequence of
Events

Functions

as crisis becomes more
apparent, functions
become more congruent
with events

2.9

Figure 4

Bravo Case

Long-Term Crisis

Peacetime   Crisis-expectation   Crisis-activated (surge)

Sequence of Events   (time) ———▶

person (Host)   with DCPA interface functions

In the peacetime period competencies of varying levels would have been achieved by the DCPA-trained personnel (highest level), special groups, general public (lowest level)

Functions

As crisis becomes more apparent functions become more congruent with events

Slight Apprehension

Increased apprehension & possible resentment over host role

Evacuation options taken

The relocation plans will be further delineated in Figure 3

HOST

constant & systematic interflows of information, materials, personnel; demands for more specific solutions to problems etc.

COMPETENCY DOMAINS

	A	K + S
LC		
GIS	A	K + S
TS	A	K + S

Levels of Competency are Products of a Specific Curriculum

State Executive Control

E   PI

transportation, food, key industrial goods & services flow.

government begins education module diffusion, possible CRP plans, among others

Government Activities

Local CD Officials

information

demand for information

Community education & instruction channels

LC   = Life Competency
TS   = Technical Skills
A   = Attitude
K & S = Knowledge and Skills
GIS = Group Interaction Skills
EPI = Emergency Public Information

——— = actual flow or vector
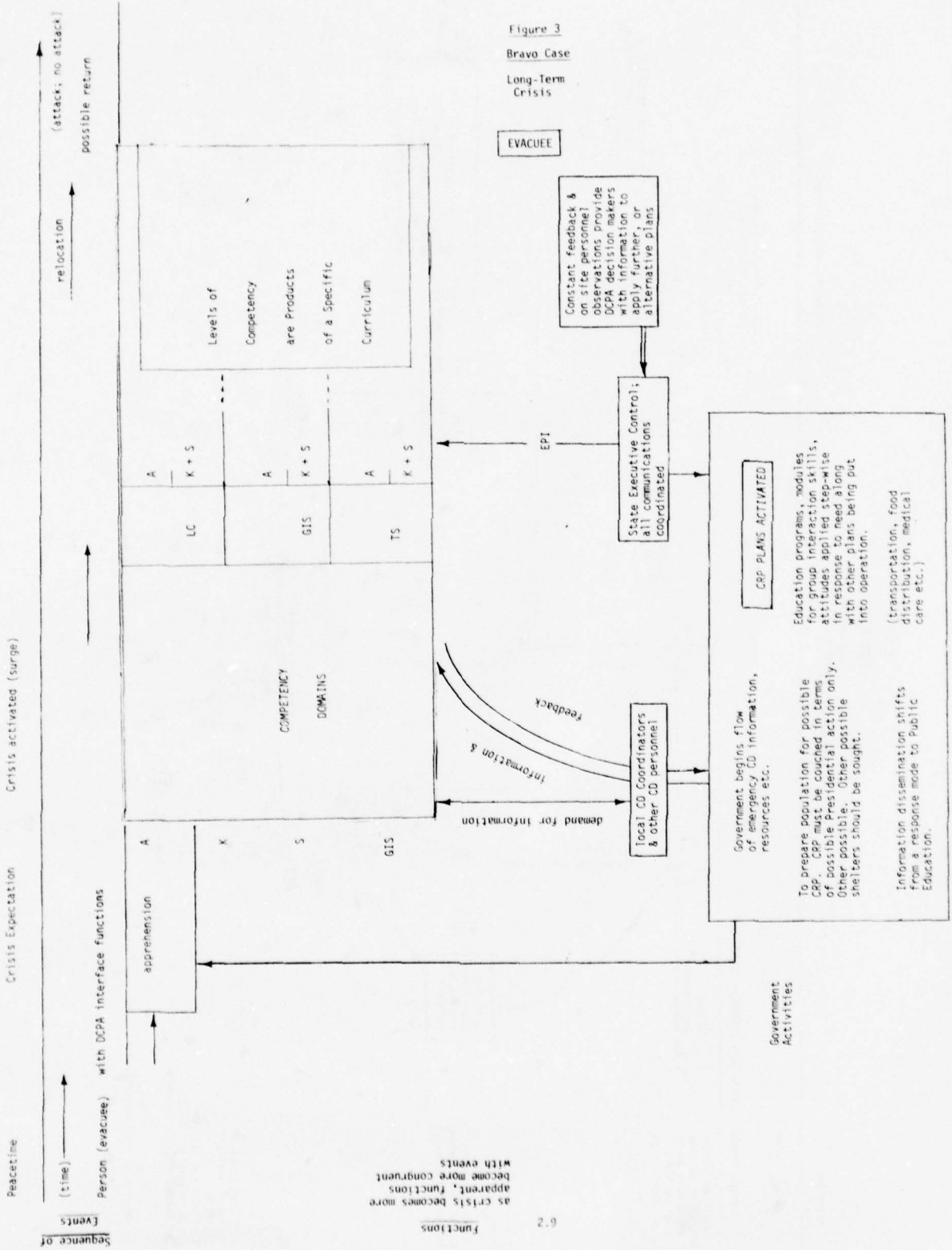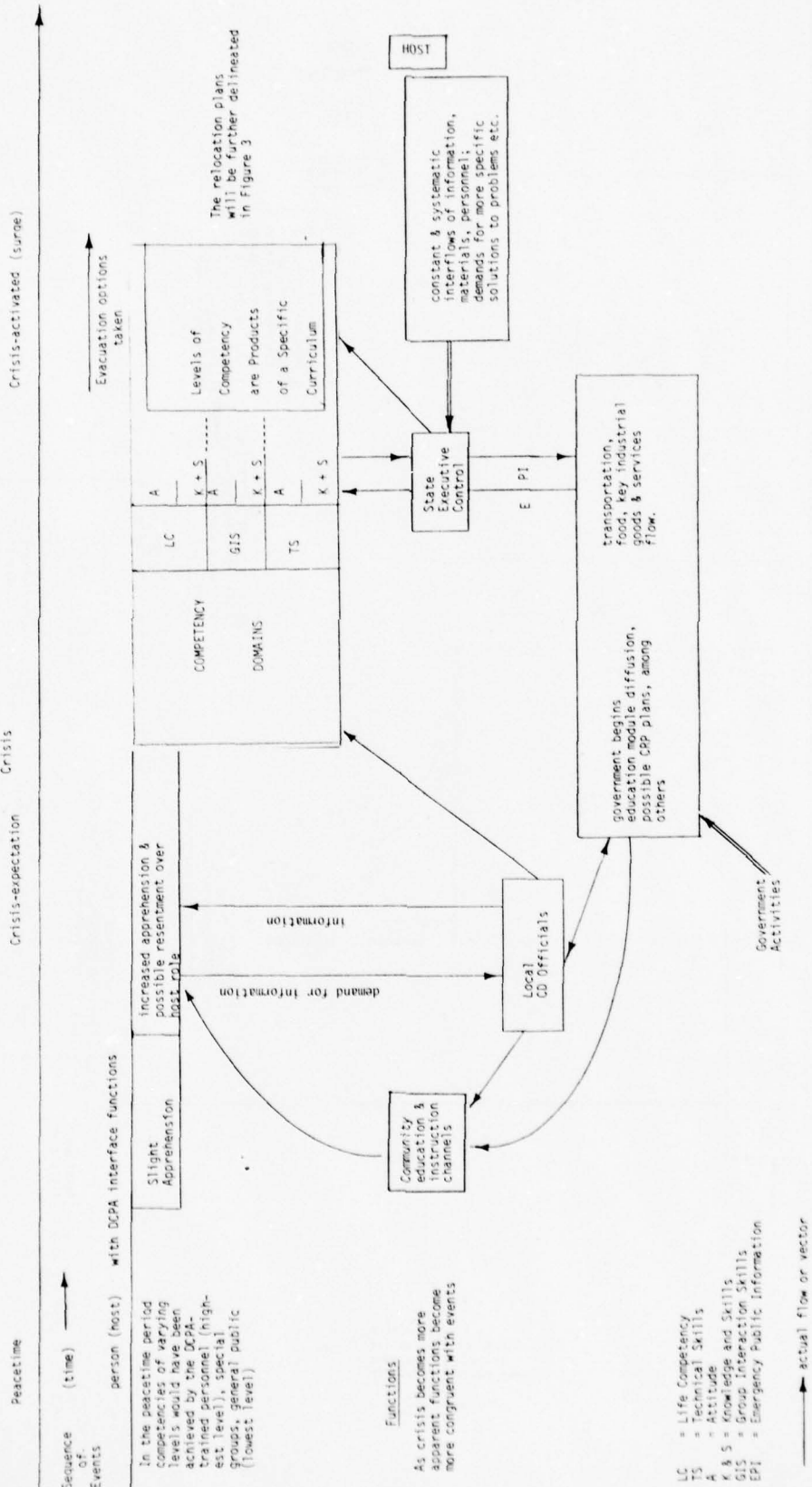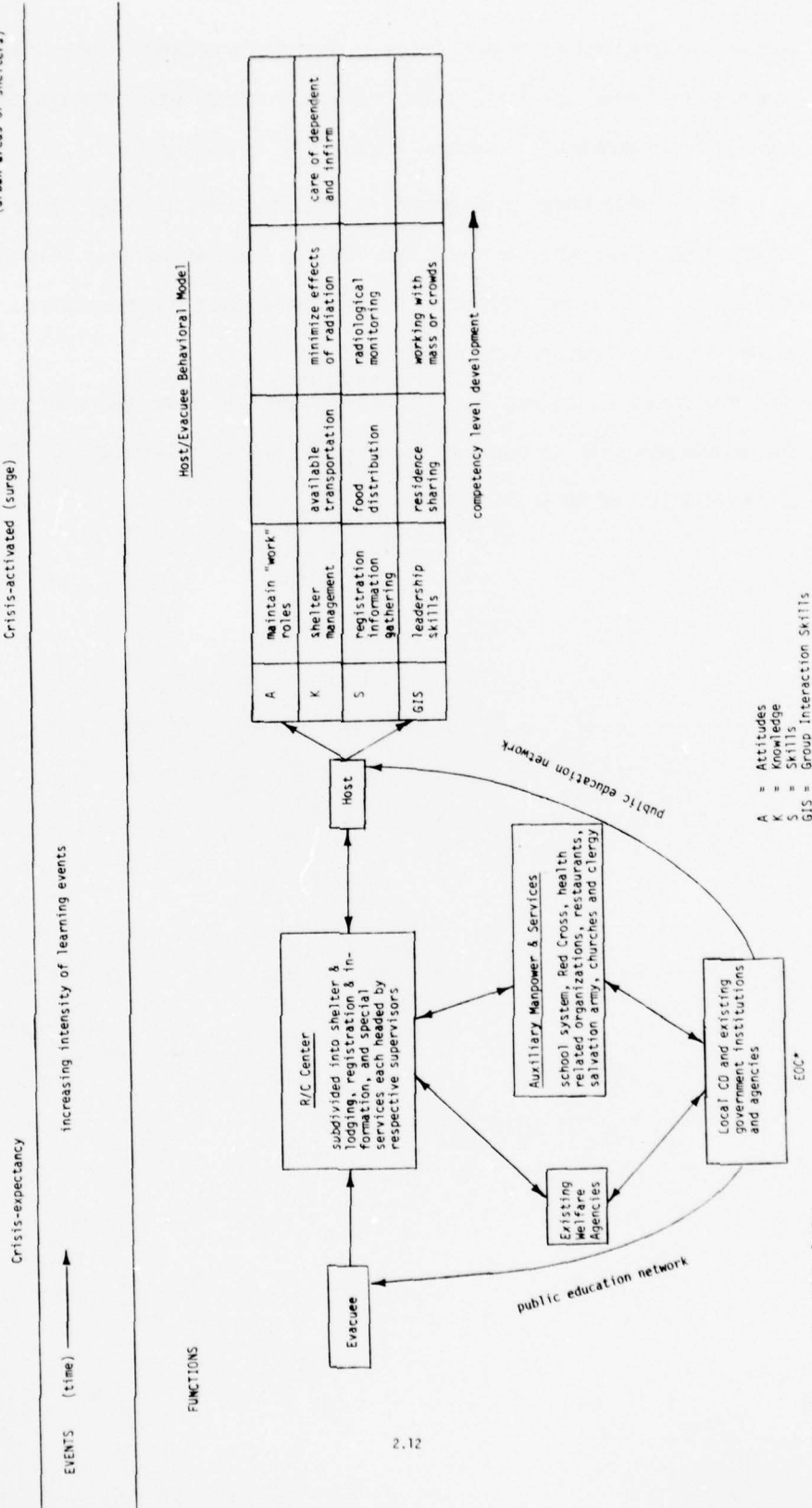
2.10

should be prepared to enable people to respond appropriately. Such response ought to be based (as in CRP) on education taking place during peacetime and with its greatest intensity during the "surge" period.

In the case where evacuation is not feasible, or where there is danger to the host area, shelters and the idea of sheltering must already have been developed. Continued education through available communications networks to raise levels of competency remains essential.

The speed of events that would produce the need for shelters precludes the development of communications beyond that of information. This situation is designated as "Alfa." (Figure 6)

Figure 5

RECEPTION/CARE ORGANIZATION
(HOST AREA)

In case of actual attack and/or natural disaster, evacuees will be moved to fall-out shelters.

EVENTS   (time) →   increasing intensity of learning events

Crisis-expectancy

Crisis-activated (surge)

(urban areas or shelters)

possible return

Host/Evacuee Behavioral Model

A	"maintain "work" roles		minimize effects of radiation	care of dependent and infirm
K	shelter management	available transportation	radiological monitoring	
S	registration information gathering	food distribution		
GIS	leadership skills	residence sharing	working with mass or crowds	

competency level development →

Host

public education network

A   = Attitudes
K   = Knowledge
S   = Skills
GIS = Group Interaction Skills

R/C Center

subdivided into shelter & lodging, registration & information, and special services each headed by respective supervisors

Auxiliary Manpower & Services

school system, Red Cross, health related organizations, restaurants, salvation army, churches and clergy

Local CD and existing government institutions and agencies

EOC*

Existing Welfare Agencies

Evacuee

public education network

FUNCTIONS

*EOC = Emergency Operations Center

2.12

Figure 6

Alfa Case
Shelter
Period

(time)

return

surge period

on-site shelter situation

| A |
| K |
| S |
| GIS |

firefighters
police
medical

local
CD (EOC)

education
mode

media

response
mode

general public safety threshold
formed by PEP presenting various
emergency contingency plans
through media

(time)

EOC = emergency operations center
A = ability
K = knowledge
S = skills
GIS = group interaction skills

2.13

In the Bravo case, (Figure 7) shelter will be prepared while evacuees are in a holding situation in the host person's home or at other housing. Regardless of whether there is an attack or not, "Key workers" (police, medical personnel, etc.) may be required to either remain in the risk area or may be expected to commute to the risk area during and after evacuation or sheltering.* The shelter will be a more permanent situation until the risk area has been decontaminated or repaired enough to be habitable and evacuees can return. During this period, PEP could be further developing attitudes and skills necessary for the population's social and physical survival. As in the crisis-activated preparation period, the motivation for knowledge will be very intense in this period; PEP will have a ready audience that will be learning quickly and continuously.

A scenario for this situation--which may be seen as contiguous with Figure 2--might proceed as described below.

At the instant of attack, evacuees and host-area people and other person-nel will have been psychologically, intellectually, and pragmatically readied for the shelter situation by the PEP and other DCPA efforts. As needed resources and institutions begin to function, the local emergency operation center (EOC) will begin to coordinate them and to assimilate information into Emergency Public Information (EPI) messages.

Eventually, as the attacked area becomes approachable, reconnaissance groups will begin to assess the damage and begin information flows back from the disaster zone. EPI information will begin to include statements about disaster-area conditions, survival of evacuation refusers, amount of workers needed, possibility of return, and so forth.

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*Nehnevajsa, 1977, Op. Cit., p. 10.

2.14

With the warning of possible disaster, the process of relocation in the host area will begin. Then, as conditions dictate, evacuees will be moved from host homes to a shelter. Finally, as conditions improve, evacuees will be moved back into the risk areas for longer and longer periods. Of course, if there is no disaster, there will be a return to the risk area.

The pattern for this new educational situation is depicted in Figure 7 on the next page.

Summary

In this chapter we have developed a functional definition of PEP in peacetime, crisis expectation and crisis activation. A hypothetical person begins intensive training and education in knowledge, skill and attitude areas. His/her behavior is transformed through a society-level network of formal and informal educational systems. Target groups are defined as to their social function at different stages: risk area evacuee, host area recipient, shelter-population. The interconnections of government decision, time period and individual behavior define the functional structure of public education. We should add here that there are a variety of alternate programs are being examined by DCPA. The descriptions come from a draft circulated at a Civil Defense Workshop. Needless to say, these descriptions are tentative and may change with further study. We include them here only to provide the reader with a sense of the complexities involved in civil preparedness planning.

Descriptions of Alternative Programs

1. Best extension of current civil preparedness program (in-place protection primarily against fallout).

2. Crisis evacuation capability (fallout protection for evacuees); use best-available nearby shelter if crisis evacuation plans not executed.

3. Shelter "slanted" in new construction, with crisis evacuation capability (fallout protection) for nearer term protection.

4. Crisis evacuation capability (less dispersed than in 2, but with 15 psi blast protection; best-available shelter if crisis evacuation plans not executed.

5. Shelter "slandted" in new construction, with crisis evacuation (15 psi protection) for nearer term protection.

6. Blast shelters in risk areas, fallout slanting in non-risk areas.

For each of the above programs, there is an option for a one-year intensive buildup of civil preparedness capabilities (at the cost of massive expenditures).

Figure 7

Shelter Period for Bravo

A = Attitudes
K = Knowledge
S = Skills
GIS = Group Interaction Skills

2.17
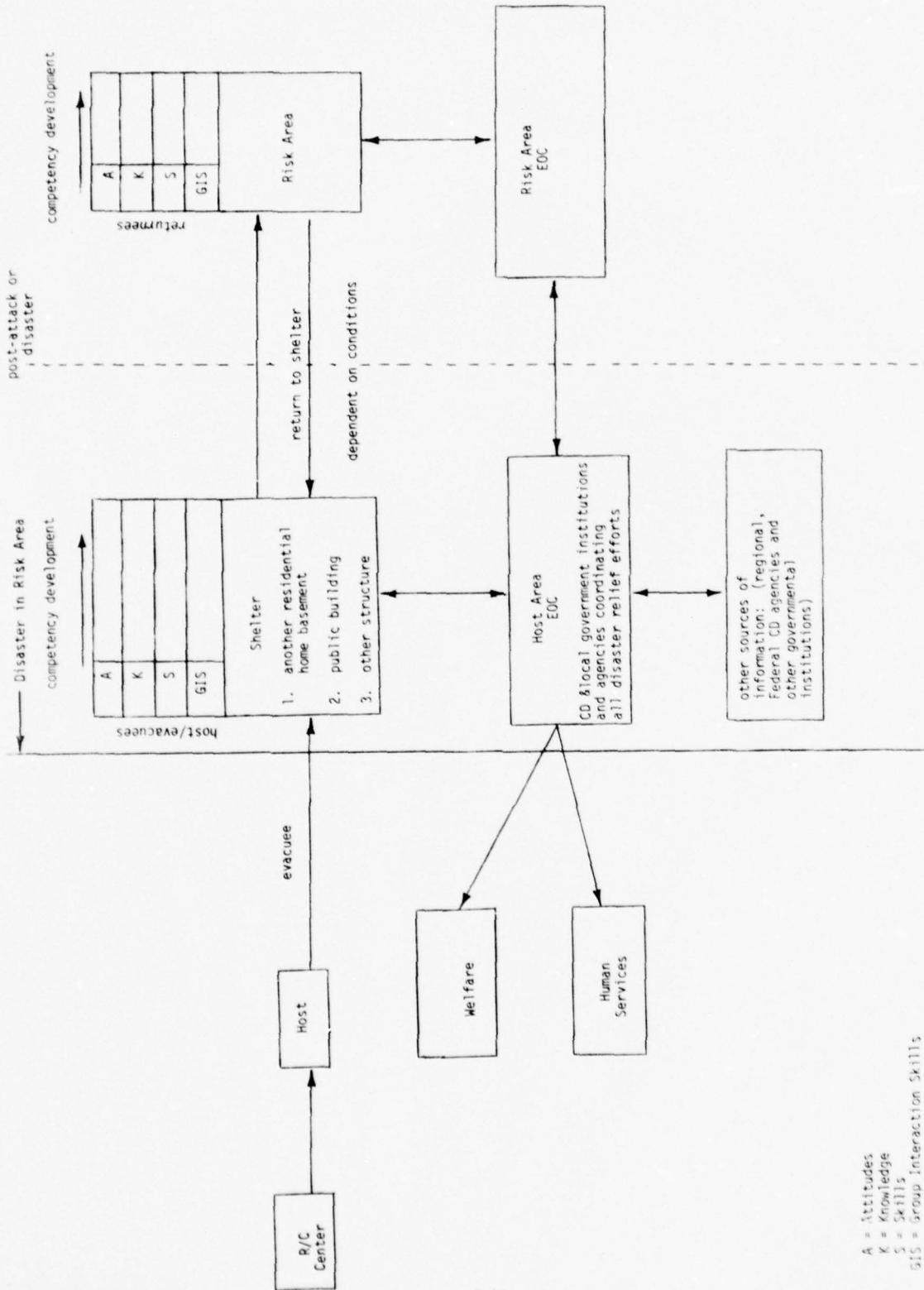
CHAPTER 3

The Behavioral Model

The behavioral model provides the reader with a depiction of the required behaviors for survival as described functionally in Chapter 2. These behaviors are analyzed here into a technical competency domain, a life competency skills domain, and a group interaction competency domain. Each domain was further analyzed into attitudes, knowledge and skill areas. These intersections were distributed for the time period and target group according to the matrix shown on the following page. None of the behavior categories, nor the curriculum specifications depicted in the next chapter, relate to peacetime. The Public Education Program is an operation requiring a great deal of time. Hence, any PEP efforts should take place during peacetime and the crisis expectancy period.

What follows is the structure of the behavioral model. After this display for the intersection of each time-period and target group, a set of behaviors is listed according to their area. Each statement is a standardized behavioral expectation described in the DCPA literature.

The structure of the behavioral model is logically related to the functional definition of PEP in that it describes distinct behaviors occurring at specific times exhibited by specific target groups.

3.1

Figure 8
Behavioral Model for Public Education Program

General Public

	Special Groups	Other Public		
Peacetime Period				Life Skills Group Interaction Skills Technical Skills
Crisis Activated Preparation Period	Hosts	Evacuees	Risk Area Non-Evacuee	Life Skills Group Interaction Skills Technical Skills
Relocation Period	Hosts	Evacuees	Risk-Area Non-Evacuee	Life Skills Group Interaction Skills Technical Skills
Reception/Care Period	Hosts	Evacuees	Risk Area Non-Evacuee	Life Skills Group Interaction Skills Technical Skills
Shelter Period	General Public			Life Skills Group Interaction Skills Technical Skills
Return No Attack	Hosts	Evacuees	Risk Area Non-Evacuee	
Post Attack	General Public			

Peacetime { Peacetime Period

Crisis Expectant { Crisis Activated Preparation Period, Relocation Period, Reception/Care Period

Crisis Activated { Shelter Period, Return No Attack, Post Attack

General Public - Potential mass audience for civil preparedness orientation. Subsequent to crisis relocation, this includes hosts, evacuees and refusers. During peacetime this population will include such civic-oriented social groups as PTAs, church groups, Rotary, K of C, etc.
*Special Groups - This group will include persons with the need or capacity for slightly higher competency levels than the general public. Teachers are included here because they need to be able to transfer skills to learners. Groups such as Boy Scouts and 4-H are included because many of the goals of their organizations overlap those of DCPA and have formal training systems.

This display is a further development of the Target group-Time period grid in Technical Report 66-2.2.0, p. 11, which follows.

3.2

TECHNICAL COMPETENCIES

Time Period: Crisis Expected   Target Group: Evacuees

ATTITUDES

1. Accept one's responsibility for locating or constructing a shelter for self and family.

2. Accept one's role as a potential evacuee during a later time period.

3. Appreciate the values of DCPA as a coordinator of activities during the crisis time.

4. Accept the need for upgrading one's survival skills.

5. Accept the need for cooperation with regulations during crisis-activated time.

6. Believe that protective measures can increase one's chance of survival in the event of a nuclear attack.

7. Accept the value of cooperation during the crisis time.

KNOWLEDGE

1. Understand the rationale for in-place sheltering and crisis relocation sheltering.

2. Know procedures for obtaining crisis information.

3. Know local procedures for relocation.

4. Know procedures for improvising a shelter large enough for one's family.

5. Know nutritional requirements for adults and children.

6. Know which supplies to bring in case of evacuation.

7. Know basic first aid skills.

8. Know special fire and safety precautions to take for one's home prior to relocation.

SKILLS

1. Be able to give appropriate first aid to seriously injured persons.

2. Be able to construct an expedient shelter.

3.3

3. Be able to stock a shelter.

4. Be able to read maps and follow sequential instructions.

5. Be able to locate reliable information.

6. Be able to use limited resources cooperatively.

TECHNICAL COMPETENCIES

Time Period: Relocation   Target Group: Evacuees

ATTITUDES

1. Be ready for immediate relocation if directed.

2. Be aware of the benefit/risk of on-site sheltering.

KNOWLEDGE

1. Know how one fits into the emergency evacuation plan.

2. Know materials and supplies to take in relocation.

3. Know procedures for securing one's home to impede nuclear fire.

4. Know procedures for constructing expedient shelters.

5. Know necessities for stocking a shelter for one's family and procedures for obtaining them.

6. Know how one's local emergency information system works.

7. Know procedures for assisting in the care of the ill or elderly, and the young.

8. Understand the potential benefits/risks of various shelters (e.g. underground--above ground).

9. Know basic information about the effects of radiation and the protection factors of various protective materials.

SKILLS

1. Be able to assist in the care and transportation of the young, old, or infirm.

2. Be able to secure essential supplies and equipment.

3. Be able to follow DCPA instructions for evacuation.

4. Be able to build expedient, on-site fallout shelters.

5. Be able to assist in the upgrading of fallout shelters.

6. Be able to secure one's home to protect it as much as possible from nuclear fire.

7. Be able to assist one's family in preparing for and coping with relocation.

TECHNICAL COMPETENCIES

Time Period: Crisis Expected   Target Group: Non-Evacuees

ATTITUDES

1. Accept one's responsibility for survival for self and family.

2. Appreciate the value of DCPA as a coordinator of activities during the crisis time.

3. Accept the possibility that during a crisis, some limitations of movement may be required.

4. Develop open-mindedness to the possible value of relocation at a later time.

5. Accept the risk of remaining in a possible target area before and/or during a crisis time.

KNOWLEDGE

1. Know the procedures for relocation, should the relocation option be taken at a later stage of the crisis.

2. Know where to obtain life supporting necessities if normal sources are evacuated.

3. Know basic first aid skills.

4. Know the potential dangers to one's self and family if one remains in an evacuated area after the relocation date.

5. Know special fire and safety precautions for preparing one's home to minimize the destruction from a nuclear explosion.

SKILLS

1. Be able to maintain an urban area during the relocation phase.

2. Be able to give appropriate first aid to seriously injured persons.

3. Be able to locate life sustaining supplies.

TECHNICAL COMPETENCIES

Time Period: Reception/Care   Target Group: Evacuees

ATTITUDES

1. Be willing to assimilate oneself into a new social milieu.

2. Be willing to work cooperatively in crowded conditions.

3. Accept austere living arrangements required because of limited lodging facilities and support services.

4. Be willing to pool one's supplies with others in the reception area.

5. Be willing to become an active participant in the emergency preparedness system.

KNOWLEDGE

1. Know the procedures for assimilating into the emergency preparedness system.

2. Know medical self-help techniques as well as first aid skills.

3. Know specific information regarding the monitoring of radiation.

4. Know techniques for assessing and increasing the protection factor of shelters using available tools and materials.

5. Know procedures for assisting those unable to care for themselves.

6. Know food selection and preparation techniques to be used under emergency constraints.

SKILLS

1. Be able to assist the DCPA preparedness system in one's area of interest or competence.

2. Be able to assist in upgrading the protection factor of one's assigned shelter.

3. Be able to assist in providing for the needs of those unable to take care of themselves.

4. Be able to provide for the nutritional requirements of one's family using limited resources.

5. Be able to assist in building and stocking temporary lodging facilities for one's family.

6. Be able to operate radiological monitoring devices.

TECHNICAL COMPETENCIES

Time Period: Relocation   Target Group: Hosts

ATTITUDES

1. Be willing to cooperate in assisting evacuees during their reception.

2. Be willing to share home resources with potential evacuees.

KNOWLEDGE

1. Be aware of auxiliary manpower from existing organizations who can be
    used to assist in the relocation.

2. Know procedures for obtaining and transmitting information.

3. Know procedures for upgrading fallout protection for one's home or
    designated fallout shelter.

4. Know basic information about the nature of radioactivity and the differing
    amounts of protection afforded by various shelter materials.

5. Know human need requirements for stocking shelters.

6. Know basic information about radiation and the protection factors of
    various materials.

SKILLS

1. Be able to receive/register evacuees.

2. Be able to identify shelter managers.

3. Arrange for reception requirements of evacuees (food, sanitation, infor-
    mation, etc.).

4. Be able to interact positively with evacuees from potentially different
    sub-cultures.

5. Be able to upgrade shelter radiation protection factors to a safe level.

TECHNICAL COMPETENCIES

Time Period: Relocation   Target Group: Non-Evacuees

ATTITUDES

1. Cooperate with emergency regulations.

2. Cooperate with the evacuation of other residents.

3. Be willing to assist in the maintenance of essential services in an
    evacuated area.

4. Be willing to consider relocation at a later time.

KNOWLEDGE

1. Know how to locate critical services and supplies in the evacuated area.

2. Understand the potential dangers of remaining behind.

3. Understand the restrictions on movement necessitated by the evacuation.

4. Know medical self-help procedures as well as first aid skills.

5. Understand the nature of radioactivity, radiological decay, and relative
    protection factors of various shelter materials.

SKILLS

1. Be able to treat radiation and blast-caused injuries and illness.

2. Be able to care for the young, elderly and ill.

3. Be able to assist in the evacuation of residents.

4. Be able to obtain life supporting supplies.

TECHNICAL COMPETENCIES

Time Period: Return, No-Attack   Target Group: Non-Evacuees

ATTITUDES

1. Be willing to assist in the preparation of the target area for the return of evacuees.

2. Be tolerant of delays in the return to normalcy resulting from relocation.

3. Be willing to assist in minimizing vandalism and spontaneous fire damage.

KNOWLEDGE

1. Know procedures for becoming an active participant in the return effort.

2. Know how to seek legal relief for expenses incurred during a crisis period.

SKILLS

1. Be an active participant in the return to normalcy by participating in the governmental return plan.

2. Be able to file claims to the proper authority for damage or unusual expense incurred during the crisis period.

Time Period: Return, No-Attack   Target Group: Evacuees

ATTITUDES

1. Be willing to cooperate with the rules and procedures for the orderly return home.

2. Be willing to accept delays in the return to normalcy resulting from relocation.

3. Be willing to accept the possibility of vandalism or damage to homes and the possibility that legal recource may have to be taken.

KNOWLEDGE

1. Know the procedures for return to one's home.

2. Know where to get reliable information about one's home and ways to get transportation home.

3. Know procedures for filing claims for damage or unusual expense incurred during the relocation.

SKILLS

1. Be able to actively participate in the return, assisting others according to governmental instructions.

2. Be able to file claims to the proper authority for damage or unusual expense incurred during the relocation.

TECHNICAL COMPETENCIES

Time Period: Shelter Living   Target Group: General Public

ATTITUDES

1. Have a positive attitude toward the possibility and value of surviving.

2. Be willing to live cooperatively under the constrained conditions of the shelter.

3. Be willing to learn skills that might be required for survival after an attack.

4. Be willing to participate in the duties and responsibilities of the shelter community.

5. Feel responsibility for the ultimate survival of one's self, family, and social values.

KNOWLEDGE

1. Know procedures for keeping in communication with neighboring shelters or with the central community/communication system.

2. Know procedures required for meeting sanitation needs in a shelter.

3. Know procedures for food storage and preparation in the cramped quarters of a shelter.

4. Know procedures for rationing food and water in an effective way.

5. Know procedures for operating, interpreting and repairing a radiological monitoring device.

6. Know procedures for improvising ventilation, heating and lighting systems with available materials.

7. Know techniques for suppressing fires with available materials.

8. Know techniques for treating radiation sickness and explosion-related injuries with available materials.

9. Know specifiecs about the nature of radiation and fallout and the effects over various lengths of time.

10. Know procedures for decontaminating food containers, water, and persons.

11. Know procedures for decontaminating the outside environment.

SKILLS

1. Be able to live cooperatively in crowded, uncomfortable conditions.

2. Be able to meet the nutritional needs for one's family from available food supplies with little or no cooking.

3. Be able to diagnose and treat radiation sickness and explosion-related injuries using available supplies.

4. Be able to use a radiological monitoring device.

5. Be able to communicate effectively with neighboring shelters, or with the local emergency information system.

6. Be able to ration food and water to shelter residents.

7. Be able to fabricate heating, ventilation, lighting and sanitation systems using available resources.

8. Be able to suppress shelter fires using available resources.

9. Be able to efficiently weigh the potential benefit/risk of venturing out of the shelter to suppress fires, gather supplies, etc.

10. Be able to recognize radiation contamination, and decontaminate food containers, persons and water.

TECHNICAL COMPETENCIES

Time period: Return, No-Attack   Target Group: Hosts

ATTITUDES

1. Be willing to assist in the organized effort to systematically return
    evacuees to their homes.

2. Be willing to accept delays in the return to normalcy resulting from the
    relocation.

KNOWLEDGE

1. Know procedures for assisting in the return of evacuees.

2. Know procedures for the orderly disassembly of temporary lodgings and
    expedient shelters.

3. Know the available legal recourse for damage or expenses incurred
    during the relocation.

SKILLS

1. Be able to assist in the return of facilities to normalcy.

2. Be able to participate in the return of evacuees to their homes.

Time Period: Reception/Care   Target Group: Non-Evacuees

ATTITUDES

1. Be willing to assist in the maintenance of city operations at a minimum level.

2. Be willing to accept work assignments from public officials.

3. Be willing to live under some movement restrictions necessitated by limited public protection services.

4. Accept the belief that the best chance for survival is for everyone to work together.

5. Be willing to assist in the construction of expedient blast shelters.

KNOWLEDGE

1. Know the procedures for assimilating into the emergency preparedness system.

2. Know medical self-help techniques as well as first-aid skills.

3. Know specific information regarding the monitoring of radiation.

4. Know techniques for constructing close-in blast/fallout shelters capable of withstanding overpressure and heat as well as shielding from fallout.

5. Know procedures for assisting those unable to care for themselves.

6. Know food selection and preparation techniques that can be used under emergency conditions.

SKILLS

1. Be able to assist the local preparedness system in some manner.

2. Be able to assist in the construction of shelters capable of withstanding overpressure and heat as well as providing shelter from fallout.

3. Be able to attain the nutritional requirements for one's family or assigned group.

4. Be able to operate a radiological monitoring device.

5. Be able to prepare food under emergency conditions.

TECHNICAL COMPETENCIES

Time Period: Reception/Care   Target Group: Hosts

ATTITUDES

1. Be willing to work cooperatively in crowded conditions.

2. Be willing to assist evacuees in adjusting to new living conditions.

3. Accept austere living arrangements required of all because of an increased burden on support services.

4. Be willing to share one's home and supplies with evacuees.

KNOWLEDGE

1. Know the procedures for assisting in the emergency preparedness system.

2. Know medical self-help skills as well as first aid skills.

3. Know specific information regarding the monitoring of radiation.

4. Know techniques for assessing and increasing the protection factor of shelters using available tools and materials.

5. Know procedures for assisting those unable to care for themselves.

6. Know food preparation and selection techniques under situational constraints.

SKILLS

1. Be able to assist in the reception and care of evacuees.

2. Be able to assist the local preparedness system in one's area of interest or competence.

3. Be able to upgrade the protection factor of one's assigned shelter.

4. Be able to assist in providing for the needs of those unable to take care of themselves.

5. Be able to prepare and test plans for movement from lodging to shelter.

6. Be able to provide for the nutritional requirements of a family using limited supplies.

7. Be able to fabricate and stock temporary lodgings for evacuees.

8. Be able to stock shelters with life supporting requirements.

TECHNICAL COMPETENCIES

Time Period: Post-Attack   Target Group: General Public

ATTITUDES

1. Understand that the best chance for survival lies in cooperation.

2. Accept one's responsibility for survival.

3. Appreciate governmental limitations in support of one's survival efforts.

4. Be willing to work toward the rebuilding of society.

5. Appreciate the vast potential changes in living styles that may be necessitated by the new situation.

6. Accept the possibility that evacuees may not be able to return to their homes for a long time or that their homes have been destroyed.

7. Be willing to adapt to new life demands and to learn new skills that may be required for survival.

KNOWLEDGE

1. Have a thorough knowledge of radiation and the effects of fallout.

2. Know procedures for assessing radiation damage to crops, animals and packaged foodstuff.

3. Know procedures for decontamination of land, food, buildings, water, crops.

4. Know dangers of exposure to radiation, methods of monitoring radiation levels and procedures for determining "safe" exposure times to various levels.

5. Know procedures for fabricating more comfortable living arrangements if prolonged shelter living is required.

6. Know basic construction techniques and requirements.

7. Know basic farming techniques.

8. Know procedures for linking with the official information system to request or offer assistance or supplies.

9. Know procedures for meeting sanitation needs over an extended time.

10. Know procedures for locating, testing and delivering fresh water.

11. Know techniques for improvising power sources, heating sources and lighting.

12. Know techniques for efficient food preparation under the constraints of the post-attack environment.

SKILLS

1. Be able to locate adequate food for meeting the nutritional requirements of the shelter members.

2. Be able to assess the safety/time factor involved in leaving the protected environment of the shelter.

3. Be able to institute a self-government procedure for shelter members.

4. Be able to construct adequate lodging if required.

5. Be able to locate, test and deliver adequate water supplies to meet the needs of shelter members.

6. Be able to cultivate common garden crops.

7. Be able to assess radiation contamination damage to crops, animals, packaged food stuffs and humans.

8. Be able to decontaminate land, buildings, water, food and persons.

9. Be able to construct and maintain adequate sanitation facilities.

10. Be able to fabricate or improvise simple power sources, heating sources and lighting.

11. Be able to efficiently prepare food under the constraints of the post-attack environment.

12. Be able to link shelter to an official or unofficial communication system.

13. Be able to locate or fabricate clothing.

A Note on Life Skills and Group Interaction Competencies

Both life competencies and group interaction skills are important for all groups at all times. Shared leadership, and giving special care to the aged are typical of the knowledge and skill areas that can be effective at any time. An effective PEP effort that teaches these ideas may have an effect beyond the immediate goals of civil preparedness.

LIFE COMPETENCIES

Time Period: Crisis Expected   Target Group: Evacuees

ATTITUDES

1. Be aware of the scarcity of resources, and be willing to share and conserve them.

2. Be aware of one's community crisis plans and recognize relocation as an alternative in time of emergency.

3. Be aware of the value of group cooperation in dealing effectively with crisis situations.

4. Be willing to cooperate with a local emergency-preparedness plan.

KNOWLEDGE

1. Know the location of community shelters.

2. Know where to obtain reliable information concerning the state of the crisis.

3. Know one's community crisis plans and be prepared to follow them.

4. Know proposed relocation sites, and the transportation modes and policies to be used during relocation.

SKILLS

1. Be able to locate reliable information concerning the state of the crisis.

2. Be able to care for the sick, injured, and infirm.

3. Be able to locate essential consumable items for daily living.

LIFE COMPETENCIES

Time Period: Crisis Expected   Target Group: Hosts

ATTITUDES

1. Be aware of the scarcity of resources and be willing to share and conserve them.

2. Be aware of the possibility that individuals may be asked to share their residence with evacuees from other areas.

3. Be aware of one's community crisis plan, and be willing to follow it.

KNOWLEDGE

1. Know the location of community shelters.

2. Know where to obtain reliable information concerning the state of the crisis.

3. Know one's community crisis plans.

4. Know proposed relocation sites, and the transportation modes and policies to be used during relocation.

5. Know food, water, and supply requirements for individuals.

6. Know basic self-help medical skills.

SKILLS

1. Be able to modify one's living quarters to accomodate a larger number of people if necessary.

2. Be able to locate reliable information concerning the crisis.

3. Be able to recognize radiation sickness and to care for the sick, injured, and infirm.

4. Be able to locate essential consumable items for daily living.

LIFE COMPETENCIES

Time Period: Crisis Expected   Target Group: Non-Evacuees

ATTITUDES

1. Be aware that relocation may be a possible option at a later stage of the crisis.

2. Appreciate the risks of staying behind during a relocation.

KNOWLEDGE

1. Know the procedures for relocation, should the relocation option be taken at a later stage of the crisis.

2. Know that there will be severe restrictions on non-evacuees.

3. Know that non-evacuees will be expected to maintain urban areas at a minimal level of functions during relocation.

4. Know the possible dangers and consequences of remaining in evacuated areas.

5. Know the appropriate items to stockpile.

6. Know procedures for obtaining adequate water and food.

SKILLS

1. Be able to maintain urban areas at a low level during relocation.

2. Be able to stockpile necessary items for remaining in an evacuated area.

LIFE COMPETENCIES

Time Period: Relocation   Target Group: Evacuees

ATTITUDES

1. Be aware of the frustration that may result from relocation if there is no cooperation among individuals and groups.

2. Be aware of the problems that living in crowded quarters can create, and plan to deal with them.

3. Be willing to follow instructions from local government and those in charge of relocation operations.

KNOWLEDGE

1. Know how the evacuation operation will take place in your area.

2. Know necessary items to take when evacuating.

3. Know the shortest and most direct route to follow to the relocation site.

4. Know who is in charge of relocation operations and cooperate with them.

5. Be able to secure one's home prior to evacuation.

SKILLS

1. Be able to prepare one's self and family to relocate on short notice.

2. Be able to read and comprehend maps.

3. Be able to secure necessary items for the relocation.

4. Be able to follow instructions as they are given.

5. Be able to secure one's home prior to evacuation.

LIFE COMPETENCIES

Time Period: Relocation   Target Group: Hosts

ATTITUDES

1. Be aware of the frustration that may result from relocation if there is no cooperation among individuals and groups.

2. Be aware of the problems that living in crowded quarters can create, and plan to deal with them.

3. Be willing to assist evacuees in their relocation effort.

4. Be willing to follow instructions local government and those in charge of relocation operations.

KNOWLEDGE

1. Know one's role in the relocation phase.

2. Know how to orient evacuees to the new environment.

3. *Know who is in charge of relocation operations and cooperate with them.*

SKILLS

1. Be able to orient evacuees to their new environment.

2. Be able to follow instructions as they are given.

LIFE COMPETENCIES

Time Period: Relocation   Target Group: Non-Evacuees

ATTITUDES

1. Be willing to help others who wish to relocate.

2. Be willing to follow instructions from local officials and those in charge of relocation.

KNOWLEDGE

1. Know what can be done to assist in the relocation.

2. Know who is in charge of relocation operations and cooperate with them.

SKILLS

1. Be able to assist in the relocation operations.

2. Be able to follow instructions as they are given.

LIFE COMPETENCIES

Time Period: Reception/Care   Target Group: Evacuees

ATTITUDES

1. Be willing to work in mass or crowd situations.

2. Be willing to cooperate with relocation officials in order to speed up operations.

3. Be willing to contribute oneself to the manpower force.

4. Be willing to provide information concerning self and family to the registration officials.

KNOWLEDGE

1. Know one's skills that can be used in the manpower force.

2. Know how to work in mass or crowd situations.

3. Know what information is required to give registration officials.

SKILLS

1. Be able to work in mass or crowd situations.

2. Be able to supply registration officials with necessary information concerning self and family.

LIFE COMPETENCIES

Time Period: Reception/Care   Target Group: Hosts

ATTITUDES

1. Be willing to provide aid in the registration of evacuees.

KNOWLEDGE

1. Know the procedures for registering evacuees.

2. Know where the reception/registration centers are located in the community.

3. Know what forms of recreational activities are available in the community.

SKILLS

1. Be able to register evacuees.

2. Be able to direct evacuees to reception/registration centers.

3. Be able to provide recreational activities for self, family, and evacuees.

general areas:

1. Communicating.

2. Using group resources.

3. Resolving conflicts within a group.

4. Group planning.

5. Evaluating self, others, group.

6. Sharing leadership.

7. Making decisions.

8. Cooperating.

ATTITUDES:

1. Be sensitive to individual and group feelings.

2. Accept the responsibility for trying to understanding another's view and values.

3. Value the sharing of information.

4. Acknowledge the positive contributions each individual can make to the group.

5. Accept the abilities and limitations of others.

6. Accept his or her own abilities and limitations.

7. Accept the idea that there will be conflict.

8. Appreciate conflict resolution as a necessary group tool.

9. Appreciate the importance of dealing with conflicts openly.

10. Appreciate the importance of explaining one's beliefs and goals while trying to resolve conflicts.

11. Appreciate the importance of individual and group feelings while trying to resolve conflicts.

12. Appreciate and respect differences among people and groups.

13. Value planning as a necessary process for accomplishing tasks and achieving goals.

14. Value a systematic approach to tasks.

15. Value the generating of alternatives before reaching a group decision.

16. Value the use of group decisions in planning as a means of getting the greatest possible commitment from the group.

17. Be willing to evaluate him or herself and others.

18. Accept constructive criticisms and suggestions from fellow group members.

19. Accept new ideas and change; and appreciate the importance of constant evaluation of group performance as a first step toward improvement.

20. Value one's own abilities to lead; respect the abilities of others to lead.

21. Value the qualities of leadership and of shared leadership.

22. Value the proper use of power and influence.

23. Understand the importance of choosing a way of making a decision that is appropriate to the situation.

24. Value participation by the whole group in deciding which way of decision-making is best in a particular situation.

25. Value decision-making by the whole group over decision-making by a single person or by a small part of the group in most situations.

26. Accept the responsibility for developing cooperative effort in a group.

27. Value cooperative effort over competition.

28. Value the sharing of responsibility for developing cooperative effort.

INFORMATION AND KNOWLEDGE:

1. Give information.

2. Receive information.

3. Explain how an individual's values can affect communication.

4. Keep information.

5. Remember information.

6. Involve others in a group discussion.

7. Develop a broad understanding of the term "resources."

8. Know the abilities of other group members.

9. Understand the constraints affecting the use of the resources of the group.

10. Understand the subjective factors involved in making a decision about which resources to use.

11. Understand the potential usefulness of conflict.

12. Understand the different causes of conflicts.

13. Know different ways of dealing with conflicts.

14. Know how well one can deal with conflicts and how well others can deal with conflicts while working as group to get a job done.

15. Understand the tasks to be accomplished.

16. Understand the constraints created by the situation.

17. Acknowledge the need for consistency between a chosen plan and the group's goals and resources.

18. Know techniques for planning.

19. Understand the need to gather information before determining a plan of action.

20. Know when changes must be made in a situation.

21. Realize that conflicts may develop between accomplishing a task and maintaining the group.

22. Know the questions to ask when evaluating.

23. Understand the process of evaluation.

24. Understand the role that goals and values play in evaluation.

25. Be familiar with the qualities of leadership.

26. Know one's own leadership abilities.

27. Know the leadership abilities of other group members.

28. Understand the proper and improper bases and uses of power.

29. Understand the ways in which a decision can be made in a group.

30. Know the advantages and disadvantages of each of these ways.

3.31

31. Know the kinds of situations in which each way will or will not work.

32. Understand the factors in a situation which help to determine which way of decision-making fits that situation.

33. Understand the interrelatedness of all cooperative interaction skills and their relationship to cooperative effort.

34. Be familiar with various ways to cooperate.

35. Understand the need for each of these ways.

SKILLS:

1. Express group feelings.

2. Give information.

3. Identify possible bias in the available information.

4. Remember valid information.

5. Help others participate in planning processes.

6. Assess and effectively use the group resources with respect to getting the job done and maintaining group unity.

7. Identify resources needed for alternative plans.

8. Assess the probability of the group accomplishing the task using the available resources.

9. Recognize types of conflicts and causes of conflicts.

10. Explain his or her beliefs in order to help resolve group conflicts.

11. Figure out different ways of resolving conflicts.

12. Express one's own feelings while dealing with conflicts honestly and openly.

13. Apply conflict resolution skills to personal, everyday jobs or situations.

14. State the task in concrete terms.

15. Propose several alternative ways of accomplishing the task.

16. Identify resources he or she can provide for each alternative.

17. Gather and assess information pertinent to the task.

18. Identify decisions that need to be made and problems that need to be solved.

19. Assess alternatives on the basis of the probability of the group's being able to carry them out successfully.

20. Apply a planning process to personal tasks.

21. Observe the group and evaluate its performance in a given situation.

22. Apply the evaluation process to a personal task or activity.

23. Identify personal values and their relationship to the group's values.

24. Participate in the leadership process.

25. Use power and influence properly.

26. Share leadership with other group members.

27. Take part in any of the various ways of decision-making.

28. Determine which way of decision-making is most appropriate in a particular situation.

29. Evaluate the effectiveness of a decision and the choice of decision-making method that led to it.

30. Carry out various ways of cooperating.

31. Identify which ways are not being used in situations where cooperative effort is not occurring.

32. Determine ways to improve cooperative effort in a group.

Summary

In this chapter, we presented the behaviors that the civil preparedness literature has described as essential in ensuring human survival. The behaviors were isolated from their contexts, and standardized as to level and abstraction of language. The behaviors were organized according to target group and time period. Moreover, they were grouped into knowledge, technical skill and attitude clusters.

CHAPTER 4

The Curriculum Model and Specifications of DCPA's Public Education Curriculum

Our next task was to further broaden the behavioral domains into the specific levels that would be required for an intelligent response on the part of target groups to crisis-expected or crisis-activated periods. These levels are logically derived from the behavior domains and from the definitions given in the introduction. The structure of these relationships is shown on the next page in the Matrix for Curriculum Submodels.

In the next section, the behavior statements listed in Chapter 3 are broken down into orientation, familiarization, low proficiency and high proficiency. These represent specific activities which, when exhibited, signify the competency level reached, given an effective curriculum.

The next step was to distribute those competencies that are functionally specific and that represent the minimal competency level for survival at a particular period of time. This distribution is shown last. Only the technical skill competencies are displayed because these skills are functionally specific, e.g., it is more useful to know how to set up an expedient shelter for some target groups at some periods rather than at other periods. Life competencies and group interaction competencies are equally required by all groups at all times.

4.1

FIGURE 9

Matrix for the Curriculum Submodels: Technical Competency Domain
Life Competency Domain
Group Interaction Domain

	General Public	Special Groups (Community leaders)	Hosts (General Public)	Hosts (Community leaders)	Evacuees (General Public)	Evacuees (Community leaders)	Non-Evacuees (General Public)	Non-Evacuees (Community leaders)
Peace								
Crisis Expectation								
Relocation Reception								
Shelter								
Return-No Attack								
Post Attack								

4.2

TECHNICAL COMPETENCY LEVELS

O - Orientation   LP - Low Proficiency
F - Familiarization   HP - High Proficiency

I.   Know Local Emergency Plan

  1. O - Be aware that there is an emergency action plan.

  2. F - Be aware of the extensiveness and limitations of an emergency action
          plan and know how to find out more information about it.

  3. LP - Be trained to participate in the implementation of the emergency
           action plan.

  4. HP - Be able to direct the implementation of the emergency action plan.

II.   Understand Nuclear Attack Hazards

  5. O - Know the dangers attending blast, fire and fallout resulting from
          nuclear explosion or blast.

  6. F - Know specifics about radiation, heat, overpressure, etc., and how
          and where to find out more specific information about nuclear attack
          hazards.

  7. LP - Be trained to help others react appropriately in case of nuclear
           attack.

  8. HP - Be able to provide the technical competency and leadership necessary
           in case of nuclear attack.

III. Know the Attack Warning System

  9. O - Be aware that the attack warning system exists.

  10. F - Know how to interpret the signals of the attack warning system and
          where to find out immediate, reliable information in the event of a
          warning.

  11. LP - Be able to participate in the attack warning system.

  12. HP - Be able to direct the attack warning system and train others to help.

IV.   Know the Location of the Fallout Shelters

  13. O - Be aware that there is a network of fallout shelters available.

  14. F - Know the locations of those shelters that are potentially accessible.

  15. LP - Be trained to help in the maintenance and stocking of the fallout
           shelter network.

16. HP - Be able to direct the operation of a fallout shelter and train others to help.

V. Know Procedures for Establishing Expedient Shelters

17. O - Be aware that effective fallout shelters can be fabricated quickly if no others are available.

18. F - Be aware of the availability of expedient shelter fabrication instructions and know how and where to secure instructions.

19. LP - Be able to construct at least one kind of expedient shelter for one's own use, and/or upgrade existing shelter.

20. HP - Understand the fundamentals of expedient shelter construction and be able to train others in their construction.

VI. Know Survival Supply Requirements for Families

21. O - Be aware that families need to supply their own survival requirements when possible.

22. F - Know what supplies are needed for what length of time and the means of obtaining them on short notice.

23. LP - Keep required supplies on hand and know how to instruct family in what to do in case shelter or relocation is required.

24. HP - Be able to train families to plan for survival supply requirements.

VII. Know Principles of Rationing Supplies in Scarcity Situations

25. O - Be aware that rationing of supplies in an emergency shelter will be necessary.

26. F - Know the minimum daily requirements for survival under shelter conditions.

27. LP - Have alternative rationing plans formulated for rationing under different contingencies.

28. HP - Be able to train others in the principle of rationing supplies in an emergency shelter, or be able to direct a rationing program in a shelter.

VIII. Know Procedures for Reducing Nuclear Fire Hazards in One's Home

29. O - Be aware that incipient fires are a major problem after a nuclear blast occurs.

30. F - Know the nature of nuclear heat and shock waves and how they contribute to incipient fire ignition.

31. LP - Evaluate the nuclear fire potential of one's own home and formulate a fire hazard reduction plan according to the evaluation.

32. HP - Be able to train others in the reduction of fire hazards. Be able to direct others in fire prevention strategies in a nuclear emergency.

IX.   Know Fire Suppression Techniques for Nuclear Related Fires

33.   O - Be aware that fire suppression techniques for nuclear-caused fires are available.

34.   F - Know basic fire suppression theory.

35.   LP - Be able to suppress fires with common materials.

36.   HP - Be able to train others in the techniques of fire suppression.

X.   Know Communication Procedures in an Emergency

37.   O - Be aware that during an emergency, communication procedures will be specified.

38.   F - Know where and how to assess emergency communication procedures.

39.   LP - Be able to participate in emergency communication procedures and formulate a plan appropriate to one's own needs.

40.   HP - Be able to operate an emergency communication system and be capable of training others to assist in the operation.

XI.   Know Procedures for Sanitation Under Emergency Conditions

41.   O - Be aware of the possible health hazards resulting from a lack of sanitary facilities.

42.   F - Know the sanitation requirements for one's family.

43.   LP - Be able to assist in improvising basic sanitation facilities for one's family.

44.   HP - Be able to direct the improvisation of sanitation facilities and the removal of wastes.

XII.   Know Procedures for Food Preparation Under Emergency Conditions

45.   O - Be aware of the nutritional components of common food stuffs.

46.   F - Know the nutritional requirements for one's family.

47.   LP - Be able to prepare a balanced diet for one's family from available food stuffs over a short period of time.

48. HP - Be able to prepare various nutritional meals, with or without cooking, for large numbers of people using available resources and be able to instruct others.

XIII. Know Procedures for Monitoring Radiation

49. O - Know the dangers of radioactive fallout.

50. F - Know the acceptable levels of radiation.

51. LP - Be able to operate a radiological monitoring device.

52. HP - Be able to repair and improvise a radiological monitoring device and be able to assess the benefit-risk of venturing out into a contaminated area.

XIV. Know Procedures for Decontamination

53. O - Be aware of the dangers of contamination from fallout.

54. F - Know the procedures for decontaminating water and persons.

55. LP - Be able to decontaminate food, water, and shelter.

56. HP - Be able to direct the decontamination of crops, animals, and buildings.

XV. Know Procedures for Upgrading Fallout and Blast Shelters

57. O - Be aware of the types of dangers from nuclear explosion.

58. F - Know the protection factors of various types of blast and fall-out shelters.

59. LP - Be able to improvise a shelter that can provide blast and fallout protection.

60. HP - Be able to instruct or direct others in upgrading shelter protection.

GROUP INTERACTION COMPETENCIES

XVI. Communicating

61.   O - Be sensitive to group feelings and the value of communicating.

62.   F - Be able to give and receive information as an active group member.

63.   LP - Understand some of the protocols of communicating and be able to involve others in group discussion as a small-group facilitator.

64.   HP - Understand strategies for effective communication in a group, be able to facilitate a large group, be able to teach beginning communication skills.

XVII. Using Resources

65.   O - Know basic resources needed to accomplish a given task, and accept one's own role as a resource and a constraint to the group.

66.   F - Understand constraints operating within the group and participate actively as a resource to the group.

67.   LP - Understand the constraints affecting the use of resources of the group, and be able to lead a small group in identifying and using group resources.

68.   HP - Understand subjective factors involved in decision-making about group resources and be able to teach small groups in the use of group resources.

XVIII. Resolving Conflicts

69.   O - Be aware of the meaning of conflict and common causes of interpersonal and group conflicts.

70.   F - Understand basic strategies for resolving conflicts and actively participate in a group that is engaged in resolving conflicts.

71.   LP - Be able to lead a small group in identifying and resolving group conflicts.

72.   HP - Understand underlying concepts and strategies involved in conflict resolution and be able to instruct small-group leaders in group strategies.

XIX. Planning

73.   O - Be aware of the potential advantages and disadvantages of planning in a group.

74. F - Be able to actively take part in group planning.

75. LP - Be able to identify constraints and techniques involved in group planning and be able to lead a small group in planning.

76. HP - Understand planning procedures, including determining obstacles, deciding on an alternative and identifying elements for consideration; be able to facilitate group leaders in improving their planning skills.

XX. Evaluating

77. O - Be aware of some perspectives for understanding what happens in a group situation. Understand the reasons for the group to evaluate itself.

78. F - Be able to ascertain when changes should be made in a group situation, and be able to actively participate in a group evaluation process.

79. LP - Know procedures for observing and evaluating a group as a participant observer, and be able to lead a small group in evaluating its progress.

80. HP - Be able to apply the evaluation process beyond the group, and be able to instruct small group leaders in evaluation skills.

XXI. Sharing Leadership

81. O - Know basic qualities of leadership, and be part of a group choosing a leader.

82. F - Understand one's own leadership abilities; actively participate in the process of choosing a leader.

83. LP - Understand the abilities of other group members; be able to facilitate the selection of a small group leader.

84. HP - Understand the proper and improper uses of power and be able to train small-group leaders in sharing leadership.

XXII. Making Decisions

85. O - Be aware that decision-making is a function of the group and that decisions must be made in a variety of situations, and know some of the ways that decisions can be made in groups.

86. F - Know advantages and disadvantages of various decision-making strategies and actively participate as a member in a group decision-making process.

87. LP - Be able to determine the most effective decision-making strategy for a particular situation, be aware of the responsibilities in-

volved in leading a group in decision-making, and lead a small group in the decision-making process.

88. HP - Be able to evaluate the effectiveness of a decision and the process used to make it and be able to assist others in learning decision-making skills.

XXIII. Cooperating

89. O - Understand the interrelatedness of cooperative effort as a member of a group involved in a project.

90. F - Understand major ways to cooperate and actively participate in a cooperative effort.

91. LP - Understand procedures for assessing and improving the cooperation among group members and lead a small group in a cooperative effort.

92. HP - Understand the underlying strategies for achieving greater group effort and for stimulating hesitant members to increase their level of effort and be able to teach these strategies to small groups and small group leaders.

LIFE COMPETENCY LEVELS

XXIV. First Aid for Heart Attack

   93.   O - Be aware of the signs of heart attack and where to contact
            aid.

   94.   F - Know important immediate actions to take while aid is on the way.

   95.   LP - Be trained to give life-saving aid for a heart attack.

   96.   HP - Be able to teach and recruit others to assist in life-saving aid.

XXV.   First Aid for Breathing Failure

   97.   O - Be aware of breathing failure as a result of different causes.

   98.   F - Know the various techniques of restoring breathing, and be able
            to assist in these techniques.

   99.   LP - Be trained to start breathing, given the most common causes of
            breathing failure.

   100. HP - Be able to teach and pass on information concerning breathing
            failure.

XXVI. First Aid for Severe Bleeding

   101. O - Be aware of the differences in types of bleeding (vein vs.
            artery), and have some idea of basic actions to take to prevent
            loss of life due to bleeding.

   102. F - Know the ways in which bleeding may be stopped and be able to
            reduce heavy bleeding.

   103. LP - Be able to stop most bleeding without using dangerous techniques
            (i.e., tourniquets.)

   104. HP - Be able to train others and to use even dangerous or complex
            techniques.

XXVII. First Aid for Shock

   105. O - Be aware of the symptoms, dangers and causes of shock.

   106. F - Know the techniques for relieving shock and be able to make a
            person in shock comfortable.

   107. LP - Be able to keep shock under control, or relieve mild shock.

   108. HP - Be able to train others and to control or relieve extreme shock.

XXVIII. First Aid for Fractures

   109.   O - Be aware of the different kinds of fractures and actions to take
               to prevent further damage.

   110.   F - Know the techniques for setting the different kinds of fractures,
               and be able to take direction.

   111.   LP - Be able to splint most simple bone fractures.

   112.   HP - Be able to splint all fractures, and to teach others how to
                splint fractures as well.

XXIX. Surviving in Cold Weather

   113.   O - Be aware of the dangers of extreme cold (e.g. frostbite, hypo-
               thermia) and the precautions necessary to avoid the effects of
               the cold.

   114.   F - Know the physiological consequences of various degrees of
               exposure to cold. Know precautions to take to avoid the effects
               of the cold. Know emergency procedures for coping when stranded
               in the cold.

   115.   LP - Be able to give first aid for hypothermia. Be able to improvise
                shelter from the cold. Be able to locate or provide for nutrition
                and water needs if stranded in the cold.

   116.   HP - Lead a group stranded in cold weather, assist others in learning
                survival skills for cold weather, and lead a rescue party.

XXX.   First Aid for Hot-Weather Emergencies

   117.   O - Be aware of the dangers and signs of heat exhaustion and sun
               stroke.

   118.   F - Know the various degrees of heat exhaustion or prostration and
               their physical consequences.

   119.   LP - Be able to comfort and prevent further physical damage due to
                heat.

   120.   HP - Be able to relieve heat exhaustion or prostration and train
                others as assistants.

XXXI. First Aid for Burns

   121.   O - Be aware of the different types of burns and the symptoms of
               severity and of what to do and not do to prevent more damage.

   122.   F - Know the precautions and techniques for treating burns.

   123.   LP - Be able to relieve pain, and prevent tissue damage and infection
                and get aid.

124. HP - Be able to train others in relieving pain, preventing tissue damage, etc.

XXII. Emergency Transportation

125. O - Be aware that an injured, or ill person will have to moved in certain circumstances.

126. F - Know specific ways and when to move a moderately to seriously-injured person.

127. LP - Be able to move injured or ill persons.

128. HP - Be able to train or direct others in moving people, as well as moving seriously ill or injured people.

XXXIII. First Aid for Radiation Sickness

129. O - Be aware of the possibility, cause, symptoms and danger of radiation sickness.

130. F - Know what radiation sickness is and the sources of aid during and after a nuclear attack, or nuclear power-plant accident.

131. LP - Know the limits of the aid that can be given to persons with radiation sickness and be able to give such aid.

132. HP - Be able to train and direct others to give such aid.

XXXIV. Fire Prevention/Suppression

133. O - Be aware of common fire hazards in the home, basic requirements for combustion and strategies for extinguishing fires.

134. F - Know procedures for preventing household fires, containing fires, extinguishing household and camp fires, and escaping from fires.

135. LP - Be trained in fire prevention, the nature of combustion, the suppression of small fires and how to escape from fires.

136. HP - Be trained in firefighting skills and the use of equipment. Be able to direct the suppression of a small fire or train others in the prevention and suppression of small fires.

XXXV. Safety Precautions in Everyday Life

137. O - Be aware of the common home hazards and procedures for accident prevention.

138. F - Know accident prevention practices for common life situations (e.g., at home, camping, swimming, driving, etc.) and the procedures for coping with an accident.

139. LP - Be trained in accident prevention strategies for everyday life
      situations and know the methods for dealing with an accident.

140. HP - Be able to direct a safety inspection for a home, auto or camp.
      Be able to direct others in an accident situation.

XXXVI. Safety Precautions in Forest Fires

141. O - Be aware of the precautions necessary to prevent forest fires,
      while camping, logging, etc.

142. F - Know the conditions that may produce forest fires and take action
      to eliminate them.

143. LP - Be able to assist in the suppression of forest fires, and in the
      use of fire suppression equipment.

144. HP - Be able to train or direct others in forest fire prevention and
      control.

XXXVII. Tornadoes and Thunderstorms

145. O - Be aware of meteorological conditions that precede tornadoes and
      thunderstorms (whichever is relevant in the learner's region).

146. F - Know the community's safety plans in case of a tornado or thunder-
      storm, and be able to take some immediate actions given their
      approach.

147. LP - Be able to construct a shelter and/or a waterproof residence.

148. HP - Be able to train or direct others in taking shelter, or water-
      proofing residences/work places, etc.

XXXVIII. Hurricanes

149. O - Be aware of the meterological disturbances or patterns in a
      coastal area prone to hurricanes. Have some plan for action,
      and be able to take some basic precautions.

150. F - Know the kinds of precautions necessary to save life and
      property. Be able to protect one's residence, and know of
      other emergency plans.

151. LP - Be able to protect residence (have the tools and materials for
      boarding up windows etc.), and life, either by some kind of
      shelter or by possible evacuation.

152. HP - Be able to carry out community protection plans, and direct and
      guide others.

XXXIX. Floods

153.   O - Be aware of the dangers and potentials of flooding in one's
            community, and have some initial ideas for protecting one's
            residence.

154.   F - Know the kinds of strategies and resources available in one's
            community in case of flooding.

155.   LP - Be able to take reasonable action in conjunction with local
            flood warning/relief activities.

156.   HP - Be able to direct or transmit information concerning flood
            warnings/relief actions.

XL.   Earthquakes

157.   O - Be aware of the dangers of earthquake, and the options for sur-
            viving.

158.   F - Be aware of the kinds of damage that can occur (e.g. gas breaks,
            water main breaks, loss of power); be aware of the dangers in or
            out of buildings, while traveling, etc.

159.   LP - Be trained in surviving in a devastated area, getting information,
            clearing debris, and utilizing other sources of energy.

160.   HP - Be able to train or direct others in a devastated area.

XLI.   Nuclear Power Plant Accidents

161.   O - Be aware of the dangers associated with nuclear power plants and
            the recommended precautions for reducing life and damage to
            property.

162.   F - Know the details of a community plan   for nuclear accident and
            be able to take some basic precautions (first aid for radiation
            sickness, radiological monitoring, etc.)

163.   LP - Be able to prepare one's living situation for nuclear accident
            options (on-site shelters--home or public.) Know sources of
            instruction and aid and actively seek it.

164.   HP - Train or direct others in performing basic first aid for radiation
            sickness, carrying out evacuation procedures and shelter plans
            and contribute to the functioning and upgrading of protection
            operations.

XLII. Help for Special Groups/Ages

165.   O - Be aware of the procedures for assisting the elderly, infirm,
            and children, and know procedures for minimizing the risk of
            further injury.

166. F - Know procedures for caring for minor injuries, and procedures for preventing further injury.

167. LP - Be able to provide care for the elderly, infirm, and young; be able to provide care for minor injuries and illness.

168. HP - Be able to organize the care of the elderly, infirm and young. Be able to teach others to care for minor injuries and illness.

Curriculum Submodel of the Technical Competency Domain

FIGURE 10

	GENERAL PUBLIC	SPECIAL GAPS (COMMUNITY LEADERS)	HOSTS (GENERAL PUBLIC)	HOSTS (COMMUNITY LEADERS)	EVACUEES (GENERAL PUBLIC)	EVACUEES (COMMUNITY LEADERS)	NON-EVACUEES (GENERAL PUBLIC)	NON-EVACUEES (COMMUNITY LEADERS)
PEACE	Know Local Emergency Plan -O (1) Understand Nuclear Attack Hazards -O (5) Know Attack Warning System -F (10) Know Location of Fallout Shelters -O (13) Know Procedure for Establishing Expedient Shelters -O (17) Know Survival Supply Requirements -F (22) Know Fire Suppression Techniques -O (33) Know Procedure for Sanitation -F (42) Know Procedure for Food Preparation -F (46) Know Procedure for Monitoring Radiation -O (49) Know Procedure for Decontamination -O (53) Know Procedure for Upgrading Fallout Shelters -O (57)	LP (3) LP (7) LP (11) F (14) O (17) F (22) O (33) F (42) F (46) O (49) F (54) F (58)						
CRISIS EXPECTATION			Know Local Emergency Plan -F (2) Understand Nuclear Attack Hazards -F (6) Know Attack Warning System -F (10) Know Location of Fallout Shelters -F (14) Know Procedure for Establishing Expedient Shelters -F (18) Know Survival Supply Requirements -LP (23) Know Principles of Rationing -O (25) Reducing Nuclear Fire Hazards -O (29) Know Fire Suppression Techniques -F (34) Know Procedure for Sanitation -F (42) Know Procedure for Food Preparation -LP (47) Know Procedure for Monitoring Radiation -O (49) Know Procedure for Decontamination -O (53) Know Procedure for Upgrading Fallout Shelters -F (58)	LP (3) LP (7) LP (11) LP (15) LP (19) HP (24) LP (27) LP (32) LP (35) F (42) LP (51) LP (55) LP (59)	F (6) F (10) F (14) F (18) LP (23) O (25) O (29) F (34) LP (42) LP (47) O (49) O (53) F (58)	LP (3) LP (7) LP (11) LP (15) HP (24) LP (27) LP (30) LP (43) LP (47) LP (51) LP (55) LP (59)	F (2) F (16) F (10) F (14) F (18) LP (23) O (25) F (30) F (34) LP (42) LP (47) F (50) F (54) F (59)	LP (3) F (16) F (11) LP (15) LP (19) HP (24) F (26) LP (31) LP (35) LP (43) HP (47) LP (51) HP (56) HP (60)
RELOCATION RECEPTION			Know Local Emergency Plan -LP (3) Understand Nuclear Attack Hazards -F (6) Know Attack Warning System -LP (11) Know Location of Fallout Shelters -LP (15) Know Procedure for Establishing Expedient Shelters -LP (19) Know Principles of Rationing -F (26) Reducing Nuclear Fire Hazards -LP (31) Know Fire Suppression Techniques -LP (35) Know Procedure for Sanitation -LP (43) Know Procedure for Food Preparation -LP (51) Know Procedure for Monitoring Radiation -LP (55) Know Procedure for Decontamination -LP (59) Know Procedure for Upgrading Fallout Shelters	HP (4) HP (8) HP (12) HP (16) HP (20) HP (32) HP (36) HP (44) HP (48) HP (52) HP (56) HP (60)	LP (3) F (6) LP (11) LP (15) LP (19) F (26) LP (31) LP (35) LP (43) LP (51) LP (55) LP (59)	HP (4) HP (8) HP (12) HP (16) HP (20) HP (32) HP (36) HP (44) HP (48) HP (52) HP (56) HP (60)	LP (3) HP (6) LP (11) LP (15) LP (19) F (26) LP (31) LP (35) LP (43) LP (51) LP (55) LP (59)	HP (4) HP (8) HP (12) HP (16) HP (20) HP (32) HP (36) HP (44) HP (48) HP (52) HP (56) HP (60)
SHELTER	Know Location of Fallout Shelters - LP (15) Know Principles of Rationing - F (26) Reducing Nuclear Fire Hazards - LP (31) Know Fire Suppression Techniques - LP (35) Know Procedure for Sanitation - LP (43)	HP (16) HP (23) HP (32) HP (36) HP (44)						
POST ATTACK	Know Principles of Rationing - LP (27) Know Fire Suppression Techniques - LP (35) Know Procedure for Sanitation - LP (43) Know Procedure for Monitoring Radiation - Know Procedure for Decontamination - LP (55)	HP (28) HP (36) HP (44) HP (52) HP (56)						

Summary

      In this chapter, we have presented three highly-related items:

- A matrix for curriculum.

- Curriculum specifications.

- Technical skills distributed functionally for time-period and target group. (Life skills and group interaction competencies are distributed equally for all.)

Given these items, we can determine the output PEP will have to produce for these time periods and these target groups. From here, we can specify the content of that curriculum and make decisions concerning how the content should be mediated.

CHAPTER 5

Specifications for the Curriculum Content

Through curriculum development theory and the systems approach, we are able to derive specifications for the content of a curriculum which, as part of an education program, would enable a target group to achieve various competency levels in a particular behavior within the context of a particular time period. These specifications are presented in terms of content parameters that define the competency level and in terms of behavioral objectives that specify the behaviors that should be exhibited by the learner.

The content specifications are presented only as examples of the next logical phase of development. Examples of this step are presented solely because this level goes beyond what is necessary in describing PEP's curriculum. Some such detail, however, should be attended to if the means by which the PEP curriculum will be mediated and delivered are to be given adequate direction. Thus, the specifications are presented for development purposes only.

This sample represents content for behaviors from each competency level. For example, the first competency area exemplified is technical and the behavior specified is "Know procedures for building expedient shelters."

Because the technical competency area can be functionally analyzed, two examples are given. The examples specified here are clearly important and are well-developed in the literature.

CONTENT SPECIFICATIONS FOR SKILL CURRICULUM

TECHNICAL COMPETENCY

Know Procedures for Building Expedient Shelters

I. Orientation - Be aware that effective fallout shelters can be constructed quickly if no others are available.

   a. Content Parameters

      The content to be selected will address the types of expedient shelters, ranging from shelters fabricated in the ground to shelters with increased protection factors. The descriptions will emphasize the use of commonly-available materials and ease of fabrication.

   b. Behavioral Objectives

      1. The learner will demonstrate an awareness of various types of shelters.

      2. The learner will demonstrate an awareness of factors that increase shelter protection.

      3. The learner will be able to demonstrate an awareness of commonly available materials for shelter construction.

      4. The learner will demonstrate an awareness of the ease of shelter fabrication.

      5. The learner will recognize that it is possible to construct an expedient shelter.

      6. The learner will demonstrate an awareness that he or she may well be responsible for shelter construction.

   c. Orientation Competency Level

      1. The learner will correctly answer 75% of the questions sampling each objective.

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II. Familiarization - To know the availability of expedient shelter fabrication instructions and how and where to secure these instructions.

a. Content Parameters

The content to be selected will address the protection factors of easily available materials, the sequence of procedures for fabricating a shelter, the criteria for choosing from alternative shelters and the identification of appropriate materials and shelter sites.

b. Behavioral Objectives

1. Given a situational scenario, the learner will choose:

(a) an acceptable shelter site;

(b) necessary construction tools; and

(c) a shelter type that would allow adequate protection for his/her family.

2. The learner will correctly identify at least one source for securing shelter.

3. Given possible construction materials, the learner will rank the materials in order of:

(a) their ease of adaptability; and

(b) their protection factor

c. Criteria for Meeting Familiarization Competency Level

1. The learner will correctly respond to questions addressed in objective 1.

2. The learner will correctly respond to 75% of the items sampling objective 2, and 3.

III. Low Proficiency - Be able to construct an expedient shelter for one's own use.

a. Content Parameters

The content to be chosen will address the selection of efficient designs and fabrication of shelter elements from readily available materials in several situations. Outcomes will include descriptions

and plans for improvised sanitation, lighting, ventilation, heating and food preparation systems. It will include non-food items for stocking the shelter and construction designs for living facilities.

b. Behavioral Objectives

1. Provided with a scenario, but little or no supervisory assistance, the learner will construct an expedient shelter that would provide adequate protection from the natural elements and fallout.

2. Given 100 possible non-food elements for stocking a shelter, the learner will be able to:

   (a) separate critical from non-critical elements; and

   (b) select the five most essential elements for survival.

3. The learner will demonstrate knowledge of shelter construction under alternate conditions.

4. The learner will demonstrate knowledge of shelter improvement (upgrade) procedures.

5. The learner will identify the need to spend time and effort as well as resources in demonstrating learned skills in building shelters.

c. Criteria for Meeting Low Proficiency Competency Level

1. The learner will correctly respond to questions addressed in objective 1.

2. The learner will correctly answer 75% of the questions sampling objectives 2,3,4, and 5.

IV. High Proficiency - Understand the fundamentals of expedient shelter construction and be able to train others in their construction.

a. Content Parameters

The content to be selected will address the teaching of basic engineering principles of shelter-building. These principles will give the learner the ability to adapt resources, or to innovate in any situation in order to provide adequate shelter. This involves ways of acquiring materials, providing for ventilation, and other life-support systems. With such skills, the learner will be able to direct and train learners with lower competency levels.

b. Behavioral Objectives

1. Without supervision, the learner will construct a shelter from materials available in the environment.

2. The learner will construct shelters given a variety of situations, conditions, materials.

3. The learner will improve existing shelters by repairing or upgrading sanitation, lighting, ventilation, heating, and food preparation systems.

4. The learner will inspect, evaluate, and make recommendations as to the adequacy of expedient shelters.

5. The learner will direct and complete the building of an expedient shelter within a specific amount of time.

6. The learner will identify that his or her responsibility for survival during a nuclear attack extends to his or her entire community.

7. The learner will demonstrate the ability to instruct others in building an expedient shelter.

c. Criteria for Meeting the High Proficiency Competency Level

1. The learner will correctly answer 75% of the questions or complete 75% of the procedures for testing objectives 2,3,4 and 6.

2. The learner will complete all of the tasks required to meet objectives 1 and 5.

3. The learner's students will demonstrate low proficiency level competence in expedient shelter building to meet objective 7.

CONTENT SPECIFICATIONS FOR SKILL CURRICULUM

Technical Competency

Know Fire Suppression and Prevention Techniques for Nuclear-Related Fires

I. Orientation - Be aware that fire suppression and prevention techniques for nuclear-caused fires are available.

   a. Content Parameters

      The content to be selected will address the general skills, knowledge, and attitudes related to fires caused by nuclear attack. It will include descriptions of nuclear-disaster specific fire suppression techniques and instances when they would be useful. Use of easily available materials for suppressing and preventing fires would be emphasized.

   b. Behavioral Objectives

      1. The learner will be aware of the potential hazard of fire resulting from nuclear attack.

      2. The learner will be aware that easily available materials can be used to suppress nuclear-caused fires.

      3. The learner will demonstrate an awareness of a variety of nuclear-caused fire suppression techniques and the situations where they would be useful.

      4. The learner will demonstrate an awareness that one's efforts in suppressing a nuclear-caused fire can save lives.

   c. Competency Level

      1. The learner will correctly respond to 75% of the procedures for testing objectives.

II. Familiarization - Know basic fire suppression theory.

   a. Content Parameters

      The content to be selected will address the differences between nuclear-related fires and non-nuclear related fires. It will include the nature of nuclear-caused fires and present specific suppression

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techniques. Specific responses by the nuclear shelter-dweller to nuclear-attack fires will be considered.

b. Behavioral Objectives

1. The learner will correctly identify the qualities of nuclear-caused fires.

2. The learner will specify procedures and materials for suppressing nuclear-caused fires.

3. The learner will recognize that heatwave and fire hazards are a danger to shelters during nuclear attack.

4. The learner will be able to distinguish between qualities of nuclear-related fires and non-nuclear-related fires.

5. Given a scenario of a fire in a nuclear shelter, the learner will identify procedures suppressing the fire.

c. Criteria for Meeting the Familiarization Competency Level

1. The learner will correctly answer 75% of the procedures for testing objectives 1,2 and 4.

2. The learner will correctly respond to questions addressed to objectives 3 and 5.

III. Low Proficiency - Be able to suppress fires with common materials.

a. Content Parameters

The content to be selected will address techniques for evaluating a nuclear fire situation, selecting a fire suppression procedure, and implementing the suppression procedure. It will include planning for these fires and other potential fires that occur in a shelter during a nuclear attack.

b. Behavioral Objectives

1. The learner will identify the best fire prevention and control techniques for a given shelter situation.

2. The learner will demonstrate the ability to put out a nuclear-caused fire.

3. The learner will be able to make recommendations for fire prevention and control, given specifications of a shelter.

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4. The learner will identify materials from the environment that could be part of a shelter fire-suppression plan.

5. The learner will correctly predict the suppressant's effectiveness in a variety of nuclear and related fire situations.

6. The learner will recognize that suppressing fires should be part of a realistic plan for nuclear shelter.

7. The learner will demonstrate an ability to alternate nuclear-related fire suppression strategies.

c. Criteria for Meeting the Low Proficiency Competency Level

1. The learner will correctly respond to 75% of the procedures for testing objectives.

2. The learner will correctly respond to questions addressed in objectives 2, 6, and 7.

IV. High Proficiency - Be able to train others in the techniques of fire suppression.

a. Content Parameters

The content to be selected will address the details of the theory and the skills for suppressing fire due to nuclear attack. This information will include techniques for coordinating and training people who are planning or altering shelters for nuclear attack. It will include leadership, communication and teaching strategies for nuclear-related fire suppression.

b. Behavioral Objectives

1. The learner will demonstrate advanced ability in using fire prevention and control techniques.

2. The learner will voluntarily take a leadership role in the shelter fire prevention and control aspect of the community's nuclear shelter plan.

3. The learner will demonstrate the ability to instruct others in nuclear-related fire suppression techniques and materials.

4. The learner will demonstrate a willingness to carry out the community's fire prevention and control plans and to share his or her knowledge with the community.

c. Criteria for Meeting High Proficiency Competency Level

1. The learner will correctly respond to 75% of the procedures for testing objective 1.

2. In a simulation, the learner will voluntarily and successfully lead a group in fire prevention and suppression exercises to meet objectives 2 and 4.

3. The learner's students will demonstrate low proficiency level competence in nuclear-related fire suppression techniques and materials to meet objective 3.

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CONTENT SPECIFICATIONS FOR SKILL CURRICULUM

LIFE COMPETENCY

Surviving in Cold Weather

I. Orientation - Be aware of the dangers of extreme cold and the precautions
    necessary to avoid the effects of the cold.

    a. Content Parameters

        The content to be selected will address the general causes and

    symptoms of hypothermia. It will include descriptions of basic pre-

    cautions to be taken regarding conservation of heat in one's home and

    precautions to be taken when venturing out into the cold.

    b. Behavioral Objectives

        1. The learner will be aware of the potential hazards from cold
            weather.

        2. The learner will be aware that precautions can prevent hypothermia.

        3. The learner will demonstrate an awareness of general precautions
            to be taken when venturing out into the cold.

        4. The learner will be aware that his or her actions when in the cold
            can increase the likelihood of survival.

    c. Criteria for Meeting this Competency Level:

        1. The learner will correctly respond to 75% of the procedures for
            testing objectives.

II. Familiarization - Know the physiological consequences of various degrees
    of exposure to cold. Know precautions to take to avoid
    the effects of the cold. Know emergency procedures for
    coping when stranded in the cold.

    a. Content Parameters

        The content to be selected will address specific causes, effects,

    and symptoms of hypothermia. It will include descriptions of first-

    aid measures to raise body temperature, and procedures for providing

    food, water, and shelter if stranded in cold weather.

b. Behavioral Objectives

1. The learner will correctly identify the degree of hypothermia when provided with symptoms.

2. The learner will identify the major causes of hypothermia.

3. If presented with a scenario of a family stranded in the cold with few supplies, the learner will identify steps the family could take that would maximize their chances for survival.

4. If provided with symptoms of hypothermia, the learner will identify appropriate first-aid procedures.

c. Criteria for Meeting this Competency Level:

1. The learner will correctly answer questions addressed concerning objective 3.

2. The learner will correctly respond to 75% of the procedures for testing objectives 1, 2, and 4.

III. Low Proficiency - Be able to give first aid for hypothermia. Be able to improvise shelter from the cold. Be able to locate or provide for nutritional and water needs if stranded in the cold.

a. Content Parameters

The content to be selected will include information on first aid for hypothermia, alternatives for improvising shelter from the cold, finding directions, locating food, building fires, locating and purifying water, and attracting the attention of rescue parties. It will also include information on supplies to take when traveling in winter.

b. Behavioral objectives

1. In a simulated cold-weather condition, the learner will be able to:

   (a) improvise a shelter from available materials;
   (b) find his or her bearings;
   (c) locate food;
   (d) build a fire;
   (e) cook;
   (f) obtain and purify water; and
   (g) attract the attention of a rescue party.

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2. The learner will list the essential supplies to take when traveling or camping in winter.

3. In a simulated situation, the learner will give first-aid for hypothermia.

c. Criteria for Meeting This Competence Level:

The learner will demonstrate the skills in the three behavioral

objectives with no major errors.

IV. High Proficiency - Lead a group stranded in cold weather, assist others in learning survival skills for cold weather, and lead a rescue party.

a. Content Parameters

The content to be selected will address the survival skills

enumerated above. It will include leadership, communication and

teaching strategies. Instruction will include the requirements for

rescue work. It will also include strategies for keeping a group's

morale high.

b. Behavioral Objectives

1. The learner will demonstrate the ability to quickly and efficiently set up procedures for coping with cold weather.

2. The learner will demonstrate the ability to lead a small group in establishing a shelter facility from available materials.

3. The learner will demonstrate the ability to lead a small group in a cold-weather rescue effort.

4. The learner will demonstrate the ability to instruct others in preparing for and coping with cold weather emergencies.

5. In a crisis situation, the learner will keep a group's morale high.

c. Criteria for Meeting This Competence Level:

1. Objectives 1-3: In simulations, the learner will accomplish these objectives within a reasonable time frame so that the group's chance for survival is maximized.

2. Objective 4: The learner's students will demonstrate low proficiency level competence in cold weather survival skills.

3. The learner's group will demonstrate a willingness to cooperate in a survival situation.

CONTENT SPECIFICATIONS FOR SKILL CURRICULUM

LIFE COMPETENCY

Safety Precautions for Nuclear Power Plant Accidents

I. Orientation - Be aware of the dangers associated with nuclear power plants
    and the recommended precautions. Be aware of the community
    plan, evacuation possibilities, and first aid procedures for
    such accidents.

    a. Content Parameters

        The content to be selected will address the nature of nuclear

    power plant leaks, the warning system, public and private community

    shelters, evacuation options, the community plan, and the need for

    first aid to treat radiation sickness.

    b. Behavioral Objectives:

        1. From a list of qualities or indicators, the learner will select
            those which apply to a nuclear power plant leakage.

        2. When a particular warning communication is demonstrated and coupled
            with a particular meaning, the learner will discern whether the
            coupling is correct.

        3. Given an array of shelter choices, the learner will identify those
            that are suited to protect one from radiation.

        4. Given the steps of the community plan, the learner will identify
            how those steps will help the community during a nuclear accident.

        5. Given specific routes and destination points, the learner will
            recognize appropriate forms of transportation from a list of
            possibilities.

        6. From an array of first aid procedures, the learner will recognize
            those that will alleviate radiation sickness.

    c. Criteria for Meeting the Orientation Competency Level

        1. The learner will correctly respond to 75% of the procedures for
            testing objectives 1, 3, 4, 5 and 6.

        2. The learner will correctly answer questions addressed concerning
            objective 2.

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II. <u>Familiarization</u> - Know the details of the community plan. Know sources of information and guidance for performing basic first aid for radiation sickness and for evacuating the accident site.

a. <u>Content Parameters</u>

The content to be selected will address the specific details and

the progression of steps in the community plan, the various sources

of training in radiological monitoring, basic first aid techniques

for radiation sickness, and the roles and procedures to be implemented

during an evacuation.

b. <u>Behavioral Objectives</u>

1. Given the agencies and civic groups that will lead the community plan, the learner will specify the group's contributing function and the phase (of the plan) that the group is involved in.

2. The learner will recognize and identify the radiological monitoring device and locate at least one training source for operating it.

3. The learner will identify first aid procedures that are effective in treating radiation sickness.

4. The learner will specify three sources of information on the various alternative procedures for evacuation.

c. <u>Criteria for Meeting the Familiarization Competency Level</u>

1. The learner will correctly respond to 75% of the procedures for testing objectives 1 and 3.

2. The learner will correctly answer questions addressed to objectives 2 and 4.

III. <u>Low Proficiency</u> - Perform basic first aid for radiation sickness and follow through the steps of the community plan and the evacuation plan.

a. <u>Content Parameters</u>

The content to be selected will address the specific pro-

cedures for operating a radiological monitoring device, the basic

first aid tasks for treating radiation sickness, the steps of the

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community plan for nuclear power plant accidents, and the evacuation

plan procedures.

b. Behavioral Objectives

1. Without instructor directions, learner will complete all essential operations required for obtaining a proper reading on a radiological monitoring device.

2. From an array of symptoms, the learner will select the symptoms that indicate radiation sickness.

3. The learner will demonstrate basic first aid procedures for radiation sickness without referring to instructional materials.

4. In a simulation, the learner will carry out any directed task from the community plan without procedural guidance.

5. In a simulation, the learner will complete the evacuation plan procedures without instructional directions.

c. Criteria for Meeting the Low Proficiency Competency Level

1. The learner will demonstrate the skills in objectives 1, 4 and 5 with no major errors.

2. The learner will demonstrate the skills in objective 3 with no major errors.

IV. High Proficiency - Train or direct others in performing basic first aid for radiation sickness, in carrying out evacuation procedures and in leading others in an implementation of the community plan.

a. Content Parameters

The content to be selected will address the principles of

radiological monitoring device operations and repair as well as

teaching techniques for basic first aid for radiological sickness,

innovation and adaptation techniques (that can be applied to com-

munity or evacuation plans), decision-making among alternative plans

or resources (distinguishing essential from non-essential), and

qualities for community leadership development.

b. Behavioral Objectives

1. The learner's students will demonstrate low proficiency competency in the operation and repair of the radiological monitoring device.

2. The learner's students will demonstrate low proficiency competency in performing first aid procedures for radiological sickness.

3. Given a set of circumstances, the learner will develop (through adaptation or innovation) an appropriate action plan for saving lives.

4. Given an array of choices and a situational context, the learner will select those steps or resources that are essential to achieving the plan's goals.

5. In a simulation, the learner will, with skill and confidence, direct a group so that it completes all the steps of the plan.

6. The learner will specify that his or her responsibilities include the entire community by indicating this commitment in several instructional contexts.

c. Criteria for Meeting the High Proficiency Competency Level

1. The learner's students will demonstrate low proficiency level competence in radiological monitoring device operations and repair and in first aid procedures for radiation sickness to meet objectives 1 and 2.

2. The learner will demonstrate the skills in objectives 3 and 4 with no major errors.

3. In the simulation for objective 5, the learner's group will complete the tasks required in the plan.

4. The learner will correctly answer 75% of the items sampling objective 6.

CONTENT SPECIFICATIONS FOR SKILL CURRICULUM

Group Interaction Competency

Making Decisions

I. Orientation - Be aware that decision-making is a function of the group and that decisions must be made in a variety of situations, and know some of the ways that decisions can be made in groups.

a. Content Parameters

The content to be selected will address the decision-making process and the necessity of making decisions in a variety of situations. Eight methods of group decision making and examples of each method will be presented.

b. Behavioral Objectives

1. The learner will identify decision-making as a group function by discriminating between groups making decisions and groups involved in other functions.

2. The learner will identify at least three situations in which decisions must be made.

3. The learner will identify at least five of the eight methods of group decision-making.

c. Criteria for Meeting Orientation Competency Level

1. The learner will correctly respond to 75% of the procedures for testing objective 1.

2. The learner will correctly respond to questions addressed to objectives 2 and 3.

II. Familiarization - Know the advantages and disadvantages of various decision-making strategies and actively participate as a member in the group decision-making process.

a. Content Parameters

The content to be selected will address the advantages and disadvantages of the various methods of group decision-making and

will provide instructional experiences in the decision-making

process.

b. Behavioral Objectives

   1. The learner will identify at least one advantage and one dis-
   advantage of each of the group decision-making methods.

   2. The learner will participate in a group decision-making process,
   and actively contribute to the resolution of a decision-making
   situation.

c. Criteria for Meeting Familiarization Competency Level

   1. The learner will correctly answer questions addressed to objec-
   tive 1.

   2. The learner will accomplish this objective within the time frame
   of the group meeting.

III. Low Proficiency - Be able to determine the most effective decision-
making strategy for a particular situation, be aware
of the responsibilities involved in leading a group
in decision-making, and lead a small group in the
decision-making process.

a. Content Parameters

   The content to be selected will address the circumstances in

which group decision-making methods are appropriate, the possible

positive and negative outcomes of leading a group in decision-

making, and instructional experiences in which learners will lead a

small group in the decision-making process.

b. Behavioral Objectives

   1. The learner will correctly identify the appropriate decision-
   making method for a problem situation 75% of the time.

   2. The learner will identify possible positive and negative outcomes
   of a group in the decision-making process.

   3. The learner will efficiently lead a group that resolves a
   problem situation.

c. Criteria for Meeting Low Proficiency Competency Level

1. The learner will correctly answer questions addressed to objectives 1 and 2.

2. The learner will accomplish this objective within the time frame of the group meeting.

IV. High Proficiency - Be able to evaluate the effectiveness of a decision and the process used to make it and be able to assist others in learning decision-making skills.

a. Content Parameters

The content to be selected will address questions group members should answer in order to evaluate their decision and the process used to make the decision. The content will also address the skills necessary for group members to assist others in learning the decision-making process.

b. Behavioral Objectives

1. The learner will be able to apply 75% of the questions relevant to the group decision.

2. The learner will apply two of the three questions relevant to the evaluation of the decision-making process being used.

3. The learner will demonstrate the skills necessary for instructing others by the demonstration of competence in two out of three of his or her students.

c. Criteria for Meeting High Proficiency Competency Level

1. The learner will correctly answer questions addressed to objectives 1 and 2.

2. The learner will accomplish this objective within the time frame for the group meeting.

Summary

The curriculum content examples we have developed here represent an important bridge between the abstract functional display of the curriculum model and its specifications and the actual PEP that could be developed from content specifications for _all_ behavior areas. For the purposes of the feasibility analysis, only these detailed examples are necessary.

The behaviors here retain their reference numbers to provide some continuity, and to give the reader a sense of the level of concreteness required for mediation development. Moreover, they provide a non-arbitrary basis for the cost-benefit analysis of the mediation means that the PEP will utilize in actual operations.

CHAPTER 6

A Cost-Benefit Analysis of
Instructional Mediation Means

Introduction

The curriculum requirements for public education, and the curriculum
content (developed only in an exemplary way in Chapter 5) form the basis for
a public education program. This program has to be infused into an institu-
tion's program. The reason for this infusion lies in the fact that the actual
implementation of the public education program should take place with the
active cooperation of institutions, agencies and organizations who are within
the target audience. The organizational and procedural arrangements that
provide for infusion may be called the delivery system. Such arrangements
need to be developed to provide support for the instructional formats described
in this Report.* The component of the program that the delivery system man-
ages may be called the mediation system. This chapter presents a cost-benefit
analysis of the various ways mediation of instruction can be implemented.
This analysis covers two situations that may change the choice of a mediation
system. During peace-time, the budget for a civil-preparedness public educa-
tion program will be constrained. Given this fixed cost, we need to show the
best possible benefit. During the crisis-activated period, however, cost will
not be the problem. The goal of saving lives and preserving society will be
the touchstone of the public education effort. Hence, the most effective
means of instructing the target groups should be considered.

One significant aspect of the public education program is absent from

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*One possible model for infusion is in Bela Banathy, et. al., External
Training Settings Available to Diffuse Civil Preparedness Public Instruction,
San Francisco: FWL, 1975.

this analysis. We have depicted benefit and cost here in terms of money and measurable efficiency in training and educating the public. However, the public education program as we have conceived it would help produce benefits that defy measurement: the preservation of a community with its values and inter-relationships, the preservation of human life and a society-wide response to nuclear disaster.

This cost/benefit analysis is based on criteria relevant to a public education effort. These figures are applicable to education during peacetime, and to an accelerated educational program during crisis expectancy and crisis activated periods. The following tables and narrative provide a basis for making decisions as to which medium or media can deliver instructional content to the various audiences and provide training at the four competency levels.

I. The Derivation of Feasibility Rankings

There are many ways of organizing the criteria on how to identify the appropriate medium for developing skills at the required competency level. We divided the selection process into three self-evident feasibility categories: Production Feasibility, Distribution Feasibility, and Feasibility For Use (Usability). These categories are self-evident because any instructional media system first needs to be developed and communicated to the target audience. The target audience must then be able to utilize the information. In examining the first two areas, cost is very important in the choice of an instructional media system; but the following considerations are also impor-tant:

- the time it takes to develop a project from idea to delivered form;
- the number and training of the people involved in the project;
- the facilities necessary to complete the project, i.e., studios, transmission towers; and

- the complexity of the project, which covers the necessary management
  and scheduling.

Tables for Production Feasibility, P-1 (p. 6.25) and Distribution, D-1
(p. 6.30) were developed to include the above considerations. The third facet
of the delivery system, Usability, was developed differently because we are
interested here in the factors of accessibility and usability of the content
delivered by the instructional media system. The Usability mean scores were
developed by considering these two factors in the "Media Relationship to
Competency Level Table Series," I-1, I-2, I-3, and I-4 (pp. 6.13-6.16) and
the "Efficiency of Delivery Systems to the User." The scores for each of the
media considered in these tables was combined to arrive at a composite ranking
of the media based on the accessibility and usability criteria in the Utiliza-
tion Tables, U-1, U-2, U-3, U-4 (pp. 6.22-6.24).

The information from the Production Feasibility Table, P-1, the Distri-
bution Feasibility Table, D-1, and the Utilization Tables, U-1, U-2, U-3, U-4
is then shown on the Production, Distribution, and Utilization Tables for
each competency level. The information on these tables in turn was used to
compile the recommended instructional media delivery systems in the order of
their appropriateness to the competency level.

Structure

A depiction of the logical development of the different tables is pro-
vided on the next page. The chart should be read by starting with the tables
at the bottom of the outline. These work up to the Competency Level Tables
at the top of the outline. We will start our discussion with definitions of
the terms used to describe the media analyzed.

6.3

FIGURE 11
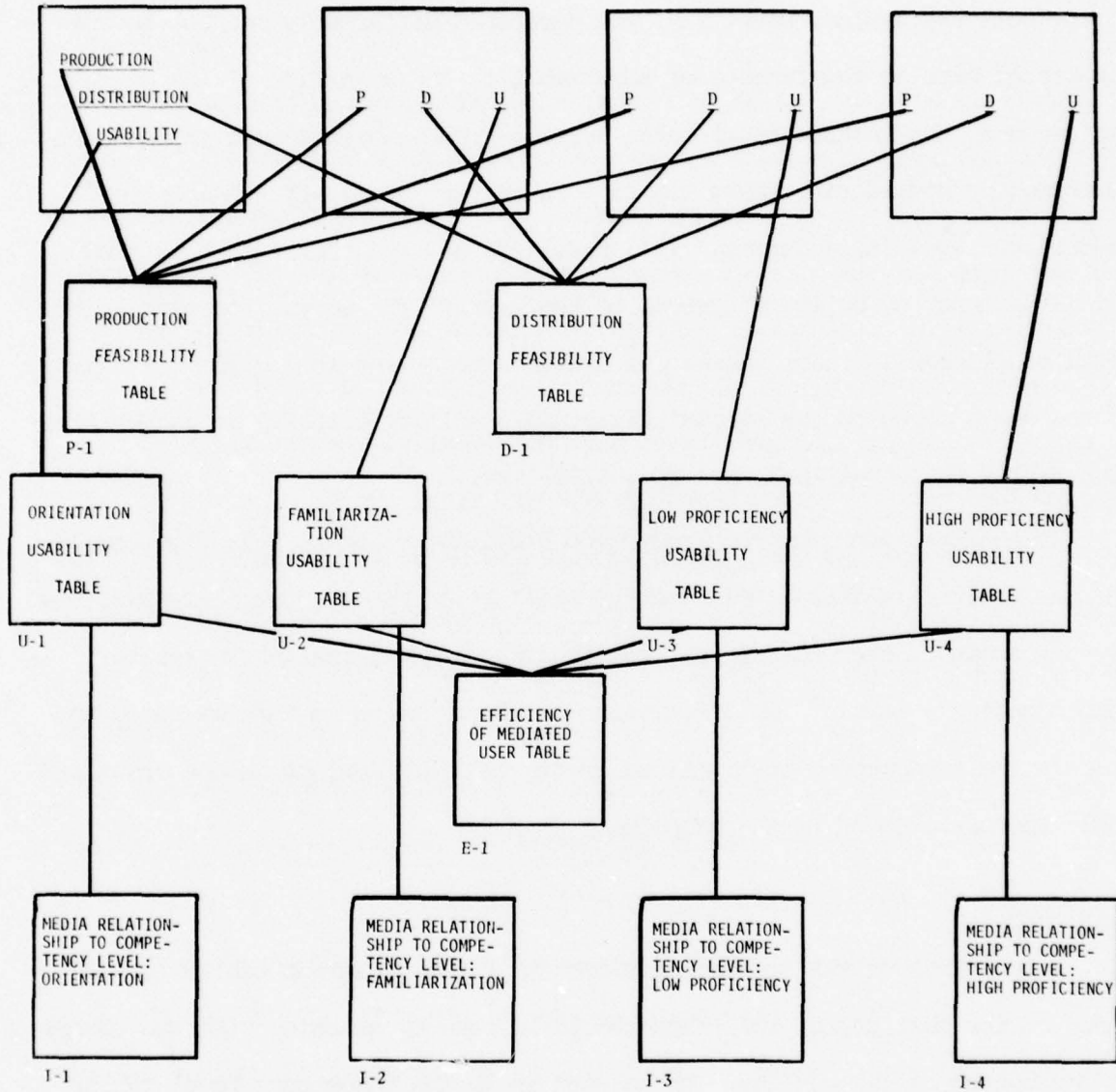
Definition of Terms

In looking at media delivery systems and combinations of these systems, the researchers came up with a list of reasonable approaches based on materials already out in the field, cost factors, and considerations of how appropriate they were in generating the skills needed within the competency levels. The following media systems were studied:

- Television-Commercial: This refers to a program 18 minutes in length that is produced on videotape to broadcast standards, and delivered by any one or a combination of commercial broadcast systems now available. The cost figures are based on figures used in the industry for similar programs. Sample budgets are included to give an idea of where the costs break down.

- Television-Commercial with Print: This referes to the above description with the addition of a printed booklet that is delivered by mail. Later in this list the booklet is described. Under each general heading, such as television, combinations of the different media that might make up a learning package will be found.

- Television-Public: This refers to the delivery of developed videotape for use by the Public Broadcasting System, or by local educational television.

- Television-Cable: This refers to the delivery system of using cable stations that rely on wire instead of the airways for transmission of the signal.

- 3/4 cassette-S.G.: ("S.G." throughout this report refers to dissemination of the instructional material to a small group, numbering usually no more than forty people.) 3/4 cassette refers to a video format that is used sometimes in broadcast but most frequently with portable playback decks that are commonly found in schools, businesses, and hospitals.

- 3/4 cassette with print: This refers to the above format with the use of a booklet.

- 3/4 cassette with facilitator: This refers to the use of a facilitator with the format. This facilitator structures a small-group learning experience, and gives direction to the discussion of questions that may arise. This assumes that the facilitator has previous training in the content. It is the training of the facilitator that we are analyzing when this item appears in the production column of the table.

- 3/4 cassette-Facil. with print: This combines the videotape, booklet, and facilitator for a small group situation. At the production level, cost involves the coordination and development of the presentation structure.

- 3/4 cassette-Individual mach.: This refers to the use of the videotape player by a single viewer, who can start and stop the tape where he or she wants.

- Motion Picture-Theater: This refers to production of a motion picture in the 16mm format, and projection of the film in theaters in either the 16mm or 35mm format. The film would be 18 minutes long.

- Motion Picture-TV: This refers to the showing of the film over commercial broadcast systems.

- Motion Picture-S.G.: This refers to the showing of the film to a small group with a 16mm projector.

- Motion Picture-S.G. with print: This refers to the use of the film in combination with the booklet.

- Motion Picture-S.G. with facilitator: This refers to the use of a facilitator with the film in a small group situation.

- Motion Picture-Facilitator w/print: This refers to the use of the film in combination with the facilitator, and the booklet.

- Motion Picture-Individual mach.: This refers to the use of the film in either 16mm or 8mm format on a machine that allows the viewer to start and stop the film.

- Slide/Tape-S.G.: This refers to the use of the slide tape program in a small group situation, and the use of projection equipment.

- Slide/Tape-TV: This refers to the delivery of the slide/tape by commercial broadcast systems.

- Slide/Tape-S.G. with print: This refers to the use of the booklet in conjunction with the program.

- Slide/Tape-S.G. with Facil.: This refers to the use of the program with a facilitator to direct discussion and structure of the small group's activities.

- Slide/Tape-Facil. with print: This refers to the combination of the booklet, the facilitator, and the program.

- Slide/Tape-Individ. Mach.: This refers to the use of the program by a viewer on a machine that allows the viewer to start and stop the program.

- Live TV: This refers to the use of direct over-the-air broadcast of a prepared written program on commercial broadcast systems. This medium was included because of its immediate impact and relevance.

- Live Radio: This refers to the use of direct over-the-air broadcast of a prepared written program on commercial radio systems. This medium was also included because of its immediate impact and relevance, as well as because of the easy portability of receiving units.

- CAI: This refers to computer-assisted instructions where the learner responds at a terminal to a prepared written program.

- Print: This refers to the development of a 16 page booklet that is distributed through use of the mail. This booklet is also used in combinations with other media.

- Written Program Learning: This refers to a self-instruction programmed learning booklet that is distributed by mail. This item was included because it is highly portable, self-contained, and requires learner participation.

- Demonstration: This refers to a live in-person demonstration of the content to a small group. When this medium was considered the need for developing the presentation and delivering it to the small group was considered.

- Simulation: This refers to a developed program that requires learners to actively participate. Often roles are assigned, e.g., one person plays a manager of a fall-out shelter. Simulations are considered to be in-depth learning experiences.

- Oral Presentation: This refers to a prepared presentation by a speaker to a small group.

II. Explanation of Tables I-1, I-2, I-3, I-4.

Objective

The purpose of the tables that follow is to present the type of skills
that were to be developed at each level in terms of the types of learning in-
volved, and to match this against the media characteristics of providing this
type of learning.

Method

After a survey of literature, variables were identified that would
describe the learning operations within the competency levels. The variables
were developed by Allen, (1967) and also came from instructional operations
described in Gagne, (1965). Each of these sources ranked the same media and
used similar variables. These rankings were used as the basis of the ranking
employed here. The ranking was converted from a three-step ranking scale to
a five-point ranking scale.

For each competency level, the types of learning involved were identified.
From the types of learning selected, the researchers selected the media stimu-
lus categories appropriate to the types of learning. Each medium was ranked
for appropriateness according to a five-point scale by the researchers. The
ranks were assigned logically by the developers of the civil preparedness
curriculum requirements, and by a consultant whose expertise is in production,
distribution, and costing media systems. A score of five means that the
medium presented the best potential for producing the required stimulus. The
rankings are:

> 5 = high
> 4 = medium to high
> 3 = medium
> 2 = low to medium
> 1 = low

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The scores were added and the mean was derived by dividing the number of variables and the sum of the media ranked according to mean score.

Benefits for the learner are measured in the utilization tables by combining the rankings generated in these tables with efficiency rankings.

The variables used here are derived from learning functions that are descriptive of the competency levels. The following definitions describe the results of instruction:

Orientation:

- Present stimulus - the learner receives a reinforcing stimulus purely for recognition.

- Visual identification - the learner can respond to a stimulus by naming it.

- Factual information - the learner perceives the logical connections in a chain of stimuli.

- Model of performance - the learner can perceive and be aware of a variety of organized actions that should be taken after a stimulus is presented.

Familiarization:

- Visual identification - the learner can name certain stimuli chains visually.

- Principles and concepts - the learner can explain why certain activities are necessary in response to a stimulus, or why certain stimuli are occurring under certain conditions.

- Provide a model of performance - the learner can, given some stimuli, tell what one should do in response to a non-novel situation.

- Induce transfer - the learner can perceive analogies in novel stimuli to what he or she has learned and adapt what he or she knows in order to respond appropriately without new instruction.

Low Proficiency:

- Learn procedures - the learner can readily apprehend specific steps in carying out simple tasks.

- Perform tasks - the learner is able to carry out simple tasks with direction.

- Provide independent instruction - the learner may, under supervision, provide some instruction in simple tasks.

High Proficiency:

- Perform skilled acts - the learner is able to carry out complex acts that require psychomotor and cognitive skills that may be innovative.

- Develop leadership - the learner can provide direction and instruction to lower competency learners.

- Solves problems - the learner can provide stimulus to him or herself to select previously learned rules to achieve a novel combination.

- Develop positive attitudes - the learner's values and beliefs are transformed so that he or she can and will learn complex items easily and can and will teach others with a minimum of external stimulus and direction.

TABLE 1

1-1 ORIENTATION (Develop Awareness and Knowledge)

Instructional Delivery Types	Present Stimulus	Learn Visual Identif.	Learn Factual Inform.	Model of Perform.	Total	Mean	Rank
T.V. (Com., Public, Cable)	4	4	3	5	16	4	5
T.V. w̄ Print. (Sm. Grp.)	4	4	3	5	16	4	5
T.V. w̄ Facilitator	4	4	3	5	16	4	5
T.V. w̄ Print. w Facilitator	4	4	3	5	16	4	5
Motion Picture	4	5	3	5	17	4.25	1
Motion Pic. on T.V.	4	5	3	5	17	4.25	1
Mot. Pic. w̄ Print.	4	5	3	5	17	4.25	1
Mot. Pic. w̄ Facilitator	4	5	3	5	17	4.25	1
Mot. Pic. & Print. w̄ Facilitator	4	5	3	5	17	4.25	1
Slide-Tape (Proj/Sm. Grp.)	3	5	3	3	14	3.5	9
Slide-Tape (T.V.)	3	4	3	3	13	3.25	13
Slide-Tape w̄ Print.	3	5	3	3	14	3.5	9
Slide-Tape w̄ Facil.	3	5	3	3	14	3.5	9
Slide-Tape w̄ Facil. w Print.	3	5	3	3	14	3.5	9
Slide-Tape - Individ. Mach.	3	5	3	3	14	3.5	9
Live T.V.	4	3	2	3	12	3.0	14
Live Radio	3	1	1	1	6	1.5	10
Computer Assisted Instruction	2	1	4	1	8	2.0	19
Print. 16 Pg. Booklet	2	2	3	3	10	2.5	16
Written Program Learning	2	3	3	1	9	2.25	18
Demonstration	4	3	2	4	13	3.25	14
Simulation	2	2	2	4	10	2.5	16
Oral Presentation	3	2	3	4	12	3.0	15

6.11

TABLE 2

1-2 FAMILIARIZATION (Identify Concepts)

Instructional Delivery Types	Learn Visual Ident.	Learn Principles & Concepts	Provide Model of Perform.	Induce Transfer	Total	Mean	Rank
T.V. (Com., Public, Cable)	4	5	5	3	17	4.25	5
T.V. w̄ Print. (Sm. Grp.)	4	5	5	3	17	4.25	5
T.V. w̄ Facilitator	4	5	5	3	17	4.25	5
T.V. w̄ Print. w̄ Facilitator	4	5	5	3	17	4.25	5
Motion Picture	5	5	5	3	18	4.25	5
Motion Pic. on T.V.	5	5	5	3	18	4.5	1
Mot. Pic. w̄ Print.	5	5	5	3	18	4.5	1
Mot. Pic. w̄ Facilitator	5	5	5	3	18	4.5	1
Mot. Pic. & Print. w̄ Facilitator	5	5	5	3	18	4.5	1
Slide-Tape (Proj/Sm. Grp.)	5	4	3	3	15	3.75	9
Slide-Tape (T.V.)	4	4	3	3	14	3.5	14
Slide-Tape w̄ Print.	5	4	3	3	15	3.75	9
Slide-Tape w̄ Facilitator	5	4	3	3	15	3.75	9
Slide-Tape w̄ Facil. w̄ Print.	5	4	3	3	15	3.75	9
Slide-Tape Individ. Mach.	3	4	3	3	15	3.75	9
Live T.V.	3	2	3	3	11	2.75	18
Live Radio	1	1	1	3	6	1.5	21
Computer Assisted Instruction	1	2	1	1	5	1.25	27
Print. 16 Pg. Booklet	2	3	3	2	10	2.5	19
Written Program Learning	3	3	1	2	8	4.0	20
Demonstration	3	2	4	3	12	3.0	16
Simulation	2	2	4	4	12	3.0	16
Oral Presentation	2	3	4	4	13	3.25	15

6.12

TABLE 3

1-3 LOW PROFICIENCY (Perform Simple Tasks With Direction)

Instructional Delivery Types	Learn Procedures	Perform Tasks	Provide Individual Direction	Total	Mean	Rank
T.V. (Com., Public, Cable)	3	2	1	6	2	18
T.V. w̄ Print. (Sm. Grp.)	3	2	1	6	2	18
T.V. w̄ Facilitator	3	2	4	9	3	8
T.V. w̄ Print. w̄ Facilitator	3	3	4	10	3.33	7
Motion Picture	3	3	1	7	2.33	18
Motion Pic. on T.V.	4	3	1	8	2.66	11
Mot. Pic. & Print.	4	3	1	8	2.66	11
Mot. Pic. w̄ Facilitator	4	3	4	11	3.66	2
Mot. Pic. w̄ Print. & Facilitator	4	3	4	11	3.66	2
Slide-Tape (Proj/Sm. Grp.)	3	3	2	8	2.66	10
Slide-Tape (T.V.)	3	3	2	8	2.66	10
Slide-Tape w̄ Print.	3	3	2	8	2.66	10
Slide-Tape w̄ Facil.	3	3	4	10	2.33	7
Slide-Tape w̄ Facil. w̄ Print.	4	3	4	11	3.66	2
Slide-Tape Individ.	3	3	2	8	2.66	10
Live T.V.	3	3	2	8	2.66	10
Live Radio	1	1	1	3	1	21
Computer Assisted Instruction	2	1	1	4	1.33	20
Print. 16 Pg. Booklet	3	2	1	6	2	18
Written Program Learning	5	2	2	9	3	8
Demonstration	5	4	4	13	4.33	1
Simulation	5	3	5	13	4.33	1
Oral Presentation	3	4	4	11	3.66	2

6.13

TABLE 4

I-4 HIGH PROFICIENCY (Perform Skill Tasks, Develop Leadership,
Solve Problems, Develop Positive Attitudes)

Instructional Delivery Types	Perform Skilled Acts	Develop Leadership	Solves Problems	Develop Positive Attitudes	Total	Mean	Rank
T.V. (Com., Public, Cable)	2	3	3	4	12	3	14
T.V. w̄ Print. (Sm. Grp.)	2	3	4	4	13	3.25	6
T.V. w̄ Facilitator	3	4	4	4	15	3.75	6
T.V. w̄ Print. w̄ Facilitator	3	4	4	4	15	3.75	6
Motion Picture	4	3	3	4	14	3.50	12
Motion Pic. on T.V.	3	3	3	4	13	3.25	13
Mot. Pic. w̄ Print.	4	4	4	4	16	4.0	4
Mot. Pic. w̄ Facilitator	4	4	4	5	17	4.25	2
Mot. Pic. & Print. w̄ Facilitator	4	4	4	5	17	4.25	2
Slide-Tape (Proj/Sm. Grp.)	2	2	3	3	10	2.5	19
Slide-Tape (T.V.)	2	2	3	3	10	2.5	19
Slide-Tape w̄ Print.	2	2	4	3	11	2.75	17
Slide-Tape w̄ Facil.	3	4	4	4	15	3.75	6
Slide-Tape w̄ Facil. w̄ Print.	3	4	4	4	15	3.75	6
Slide-Tape - Individual	2	2	3	3	10	2.5	19
Live T.V.	2	2	4	4	12	3.0	14
Live Radio	1	2	1	4	8	2.0	21
Computer Assisted Instruction	2	2	4	2	10	2.5	19
Print. 16 Pg. Booklet	2	3	4	3	12	3.0	14
Written Program Learning	3	3	3	2	11	2.75	17
Demonstration	5	3	4	3	15	3.75	6
Simulation	4	5	5	5	19	4.75	1
Oral Presentation	3	4	4	5	16	4.0	4

6.14

III. Explanation of Efficiency of Media to User Table, E-1

Objective

    The purpose of the following table is to develop a profile of the important characteristics of certain media in terms of how accessible and useful they are to the learner, and to compare different media delivery systems in terms of how they meet possible learner needs.

Method for Deriving Efficiency Measures

    The typical learner taxonomies given in the literature were not appropriate since the learners were assumed to be adults and displayed developed learning skills. The best source located as a basis for developing a profile of characteristics descriptive of the typical user of a media delivery system was Miller, (1971). From Miller, the researchers identified six criteria appropriate to the competency levels: 1) Is the medium readily accessible to the learner? That is, how quickly and simply can the learner be reached, e.g., live television broadcast versus a computer-assisted learning program; 2) Can the user decide when, and where to use the media? Is the media self-contained, as in a booklet and could the user decide in his or her situation to use it? 3) How portable is the medium? 4) Can the user actively interact with the medium? The learner may need questions answered, or need correction of an improper approach. For example, a facilitator can be more flexible, and provide greater response than a written booklet; 5) Can the user control the rate and flow of information? (Here we considered whether the learner had the opportunity to move at his or her own pace;) 6) Can the program be reused? Could the learner reuse the program, store it for whenever it was needed, and possibly pass it on to someone else? Each media delivery system was scored by the researchers on how appropriate it was to the user's

needs.   In terms of appropriateness:

$$5 = high$$
$$4 = medium\ to\ high$$
$$3 = medium$$
$$2 = low\ to\ medium$$
$$1 = low$$

The scores were added, then divided by the number of variables to obtain
a mean and ranked according to the mean score.   This information is included
on the Usability Tables (which follow the Efficiency of Media to User Table)
along with the media stimulus relationship information in order to derive
a usability ranking of the media in terms of benefits for the learner.

TABLE 5

E-1 EFFICIENCY OF MEDIA TO USER

Media	Is it Access. to User	Can User Assess When to Use	Is it Portable	Can User Interact	Can User Contr. Info.	Is Program Reusable	Ranking		
							T	M	R
T.V. - Commercial	5	2	1	1	1	5	15	2.5	17
T.V. - Comm. w̄ Print.	5	2	1	1	1	5	15	2.5	17
T.V. - Public	3	2	1	1	1	5	13	2.17	21
T.V. - Cable	2	2	1	1	1	5	12	2.0	28
3/4 cass. - Sm. Grps.	2	2	1	3	3	5	16	2.67	11
3/4 cass. Print.	2	2	1	3	3	5	16	2.67	11
3/4 cass. - Facil.	2	2	1	4	2	5	16	2.67	11
3/4 cass. - Facil. & Print.	2	2	1	4	4	5	18	3.0	5
3/4 cass. - On Indiv. Machine	3	4	1	3	5	5	21	3.5	3
Theater	5	2	1	1	1	5	15	2.5	17
Mot. Pic. - T.V.	4	2	1	1	1	5	14	2.33	21
Mot. Pic. - Sm. Grp.	3	2	1	1	1	5	13	2.17	23
Mot. Pic. - Sm. Grp. Print.	2	2	1	3	3	5	16	2.67	11
Mot. Pic. - Facil.	2	2	1	4	2	5	16	2.67	11
Mot. Pic. - w̄ Print. w̄ Facil.	2	2	1	4	4	5	18	3.0	5
Mot. Pic. - Indiv. Mach.	3	4	1	1	5	5	19	3.16	4
Slide Tape - Sm. Grp.	3	2	1	1	1	5	13	2.17	23
Slide Tape - T.V.	3	2	1	1	1	5	13	2.17	23
Slide-Tape - Sm. Grp. w̄ Print.	2	2	1	3	3	5	16	2.67	11
Slide-Tape - Sm. Grp. w̄ Facil.	2	2	1	4	4	5	18	3.0	5
Slide-Tape - w̄ Print. w̄ Facil.	2	2	1	4	4	5	18	3.0	5
Slide-Tape - w̄ Indiv. Viewer	3	4	1	1	5	5	19	3.16	4
Live T.V. (on air)	3	1	2	1	1	1	9	1.5	
Live Radio (on air)	3	1	4	1	1	1	11	1.83	29
Computer Assisted Instruction	1	1	1	5	5	5	18	3.0	5
Print. 16 Pg. Booklet	4	5	5	2	5	5	26	4.3	1
Written Program Learning	4	5	5	1	5	5	25	4.17	2
Demonstration	2	1	1	4	3	2	13	2.17	23
Simulation	2	1	1	5	5	1	15	2.5	1.7
Oral Presentation	3	2	1	4	3	1	14	2.33	21

6.17

IV. Explanation of Usability Tables, U-1, U-2, U-3, U-4

Objective

The purpose of the tables that follow is to develop a ranking of how usable a medium is in terms of its accessibility and compatibility to the user's needs and how effective a stimulus it provides to learning.

Method

The researchers combined the ranking measurements from Tables I-1, I-2, I-3, I-4 (Instructional Media Stimulus Relationship to competency level), with Table, E-1, (Efficiency of Media to User). The stimulus and efficiency scores were grouped by competency level. Then the two scores for each medium under a competency were added, divided by the two categories, and ranked according to the mean score. This information is in rank order on the Production, Distribution, and Usability Tables by Competency.

TABLE 6

ORIENTATION: U-1 USER FEASIBILITY

Media	Media Stimulus for Learning	Efficiency of Media for User	Ranking T	M	R
T.V. - Commercial	4.0	2.57	6.57	3.29	7
T.V. - Comm. w̄ Print.	4.0	3.21	7.21	3.61	1
T.V. - Public	4.0	2.0	6.0	3.0	15
T.V. - Cable	4.0	2.0	6.0	3.0	15
3/4 cass. - Sm. Grps.	4.0	2.0	6.0	3.0	15
3/4 cass. - Print.	4.0	2.93	6.93	3.47	3
3/4 cass. - Facil.	4.0	1.64	5.64	2.82	21
3/4 cass. - w̄ Facil. w̄.Print.	4.0	2.56	6.56	3.28	9
3/4 cass. - On Individ. Mach.	4.0	2.57	6.57	3.29	7
Theater	4.25	2.0	6.25	3.13	11
Mot. Pic. - T.V.	4.0	2.27	6.27	2.14	27
Mot. Pic. - Sm. Grp.	4.25	2.0	6.25	3.13	11
Mot. Pic. - Sm. Grp. Print	4.25	2.93	7.18	3.59	2
Mot. Pic. - Facil.	4.25	1.64	5.89	2.95	18
Mot. Pic. w̄ Facil. w̄ Print.	4.25	2.38	6.63	3.32	6
Mot. Pic. - Individ. Mach.	4.25	2.57	6.82	3.41	4
Slide Tape - Sm. Grp.	3.5	2.72	6.22	3.11	13
Slide Tape - T.V.	3.25	2.65	5.90	2.95	18
Slide-Tape - Sm. Grp. w̄ Print.	3.5	3.29	6.79	3.37	5
Slide-Tape - Sm. Grp. w̄ Facil.	3.5	2.00	5.5	2.75	22
Slide-Tape - w̄ Print. w̄ Facil.	3.5	2.62	6.12	3.06	14
Slide-Tape - w̄ Individ. Viewer	3.5	3.16	3.66	1.83	29
Live T.V. (on air)	3.0	1.85	4.85	2.43	23
Live Radio (on air)	1.5	1.71	3.21	1.61	30
Computer Assisted Instruction	2.0	2.42	4.42	2.21	26
Print. 16 Pg. Booklet	2.5	3.85	6.35	3.18	10
Written Program Learning	2.25	3.57	5.82	2.91	20
Demonstration	3.25	1.42	4.67	2.34	25
Simulation	2.5	2.28	4.78	2.39	24
Oral Presentation	3.0	1.28	4.28	2.14	27

TABLE 7

FAMILIARIZATION: U-2 USER FEASIBILITY

Media	Media Stimulus for Learning	Efficiency of Media for User	Ranking T	M	R
T.V. - Commercial	4.25	2.57	6.82	3.41	9
T.V. - Comm. w̄ Print.	4.25	3.21	7.46	3.73	2
T.V. - Public	4.25	2.0	6.25	3.13	17
T.V. - Cable	4.25	2.0	6.25	3.13	17
3/4 cass. - Sm. Grps.	4.25	2.0	6.25	3.13	17
3/4 cass. - Print.	4.25	2.93	7.18	3.59	4
3/4 cass. - Facil.	4.25	1.64	5.89	2.95	23
3/4 cass. - w̄ Facil. w̄ Print.	4.25	2.56	6.81	3.41	9
3/4 cass. - On Individ. Mach.	4.25	2.57	6.82	3.41	9
Theater	4.5	2.0	6.5	3.25	13
Mot. Pic. - T.V.	4.25	2.27	6.52	3.26	12
Mot. Pic. - Sm. Grp.	4.5	2.0	6.5	3.25	13
Mot. Pic. - Sm. Grp. Print.	4.5	2.93	7.43	3.72	3
Mot. Pic. - Facil.	4.5	1.64	6.14	3.07	22
Mot. Pic. - w̄ Facil. w̄ Print.	4.5	2.38	6.88	3.44	8
Mot. Pic. - Individ. Mach.	4.5	2.57	7.07	3.54	5
Slide Tape - Sm. Grp.	3.75	2.72	6.47	3.24	15
Slide Tape - T.V.	3.5	2.65	6.15	3.08	21
Slide-Tape - Sm. Grp. w̄ Print.	3.75	3.29	7.04	3.52	6
Slide-Tape - Sm. Grp. w̄ Facil.	3.75	2.00	5.75	2.88	24
Slide-Tape - w̄ Print. w̄ Facil.	3.75	2.62	6.37	3.19	16
Slide-Tape - w̄ Indiv. Viewer	3.75	3.16	6.91	3.46	7
Live T.V. (on air)	2.75	1.85	4.60	2.30	26
Live Radio (on air)	1.5	1.71	3.21	1.61	29
Computer Assisted Instruction	1.25	2.42	3.67	1.84	28
Print 16 Pg. Booklet	2.5	3.85	6.35	3.18	17
Written Program Learning	4.0	3.57	7.57	3.79	1
Demonstration	3.0	1.42	4.42	2.21	28
Simulation	3.0	2.28	5.28	2.64	25
Oral Presentation	3.25	1.28	4.53	2.27	27

6.20

TABLE 8

LOW PROFICIENCY: U-3 USER FEASIBILITY

Media	Media Stimulus for Learning	Efficiency of Media for User	Ranking T	M	R
T.V. - Commercial	2	2.57	4.57	2.29	23
T.V. - Comm. w̄ Print.	2	3.21	5.21	2.61	16
T.V. - Public	2	2.0	4.0	2.0	26
T.V. - Cable	2	2.0	4.0	2.0	26
3/4 cass. - Sm. Grps.	2	2.0	4.0	2.0	26
3/4 cass. - Print	2	2.93	4.93	2.47	18
3/4 cass. - Facil.	3	1.64	4.64	2.32	22
3/4 cass. - w̄ Facil. w̄ Print.	3.3	2.56	5.86	2.93	6
3/4 cass. - On Individ. Mach.	3	2.57	5.57	2.79	11
Theater	2.33	2.0	4.33	2.17	25
Mot. Pic. - T.V.	2.66	2.27	4.93	2.47	18
Mot. Pic. - Sm. Grp.	2.66	2.0	4.66	2.33	21
Mot. Pic. - Sm. Grp. w̄ Print.	2.66	2.93	5.59	2.80	10
Mot. Pic. - Facil.	3.66	1.64	5.30	2.65	14
Mot. Pic. - w̄ Facil. w̄ Print.	3.66	2.38	6.04	3.02	4
Mot. Pic. - Individ. Mach.	2.66	2.37	5.23	2.62	15
Slide Tape - Sm. Grp.	2.66	2.72	5.38	2.69	12
Slide Tape - T.V.	2.66	2.65	5.31	2.61	16
Slide-Tape - Sm. Grp. w̄ Print.	2.66	3.29	5.95	2.98	5
Slide-Tape - Sm. Grp. w̄ Facil.	3.33	2.00	5.33	2.67	13
Slide-Tape - w̄ Print. w̄ Facil.	3.66	2.62	6.28	3.14	3
Slide-Tape - w̄ Individ. Viewer	2.66	3.16	5.82	2.91	8
Live T.V. (on air)	2.66	1.85	4.51	2.26	24
Live Radio (on air)	1	1.71	2.71	1.36	30
Computer Assisted Instruction	1.33	2.42	3.75	1.88	29
Print 16 Pg. Booklet	2	3.85	6.85	2.93	6
Written Program Learning	3	3.57	6.57	3.29	2
Demonstration	4.33	1.42	6.75	2.88	9
Simulation	4.33	2.28	6.61	3.32	1
Oral Presentation	3.66	1.28	4.94	2.47	18

TABLE 9

HIGH PROFICIENCY: U-4 USER FEASIBILITY

Media	Media Stimulus for Learning	Efficiency of Media for User	Ranking		
			T	M	R
T.V. - Commercial	3.0	2.5	5.5	2.75	23
T.V. - Comm. w̄ Print.	3.25	2.5	5.75	2.88	18
T.V. - Public	3.0	2.17	5.17	2.59	26
T.V. - Cable	3.0	2.0	5.0	2.50	27
3/4 cass. - Sm. Grps.	3.0	2.67	5.67	2.84	19
3/4 cass. - Print.	3.25	2.67	5.92	2.96	16
3/4 cass. - Facil.	3.75	2.67	6.42	3.21	14
3/4 cass. - w̄ Facil. w̄ Print.	3.75	3.0	6.75	3.28	12
3/4 cass. - On Individ. Mach.	3.0	3.5	6.5	3.25	13
Theater	3.50	2.5	4.0	2.00	29
Mot. Pic. - T.V.	3.25	2.33	5.58	2.79	22
Mot. Pic. - Sm. Grp.	3.50	2.17	5.67	2.84	19
Mot. Pic. - Sm. Grp. Print.	4.0	2.67	6.67	3.34	8
Mot. Pic. - Facil.	4.25	2.67	6.92	3.46	4
Mot. Pic. - w̄ Facil. w̄ Print.	4.25	3.0	7.25	3.63	2
Mot. Pic. - Individ. Mach.	3.50	3.16	6.66	3.33	11
Slide Tape - Sm. Grp.	2.5	2.17	4.67	2.34	8
Slide Tape - T.V.	2.5	2.17	4.67	2.34	8
Slide-Tape - Sm. Grp. w̄ Print.	2.75	2.67	5.42	2.71	24
Slide-Tape - Sm. Grp. w̄ Facil.	3.75	3.0	6.75	3.38	6
Slide-Tape - w̄ Print. w̄ Facil.	3.75	3.0	6.75	3.38	6
Slide-Tape - w̄ Individ. Viewer	2.5	3.16	5.66	2.83	21
Live T.V. (on air)	3.0	1.5	4.5	2.25	28
Live Radio (on air)	2.0	1.83	3.83	1.92	30
Computer Assisted Instruction	2.5	3.0	5.5	2.75	25
Print. 16 Pg. Booklet	3.0	4.3	7.3	3.65	1
Written Program Learning	2.75	4.17	6.92	3.46	4
Demonstration	3.75	2.17	5.92	2.96	16
Simulation	4.75	2.5	7.25	3.63	2
Oral Presentation	4.0	2.33	6.33	3.17	15

V. Explanation of the Production Feasibility Table, P-1

Objective

The purpose of the table below is to develop a scale to compare the production feasibility of different types of media.

Method

There are many different ways of selecting criteria for comparing the production costs of different media. The researchers chose to limit the study of production costs to what the private sector would charge to produce a given program. It is also difficult to separate subsidized operations into any clear category because the basis of comparison varies with calculation of overhead, of employee benefits, etc. Limiting the production comparison to what private contractors would quote does not completely avoid the problem that information from government sources, schools, and non-profit agencies varies greatly in quantity and quality. Costs quoted are from a competitive market situation. All production quotes in the cost column are from private contractors. The researchers tried to use a reasonable quote for each medium.

For the purposes of this study, the researchers developed five measures of production feasibility. They are:

● Cost. Here we are considering the dollars needed to secure the people, materials, and equipment necessary to complete a project. The other measures are reflected in this cost measure, but cost is not necessarily included in the other measures. For example, those producing a film might spend $50,000 very differently than would those producing a computer-assisted program, since the number of people required, production time required and the facilities needed will vary greatly.

● Delivery Time. The length of time it takes a project to move from concept to finished product may also vary greatly. Certain media, such as film, rely on technologies that take time; other media, such as a radio broadcast may be done more quickly.

● Number and Skill of People Involved. The greater the number of people involved in a project, the more attention must be spent on organizing and scheduling.

● Facilities Necessary for Production. The facilities necessary to produce any given medium product vary from project to project, and medium to medium. However, in considering whether a production is feasible, the availability of facilities will influence the selection of a way to produce an item.

● Complexity of Development. This becomes a factor in the selection of an instructional item, especially when combination packages are very complex, such as a film-with-print-with-facilitator. Each of these individual media has production requirements. Furthermore, there is a great difference between managing a training development program to teach people to run simulations, and managing the development of a television project.

The scores for each of the measures were added together and divided by the number of variables to obtain the mean, after which each of the production media's mean scores was ranked. This information is presented in the Competency level tables for Production, Distribution, and Usability. The production cost comparisons for demonstrations, simulations, and oral presentations were based on developing training programs for the people who would act in these roles.

The production measures were scored on a scale of:

                    5 = high
                    4 = medium to high
                    3 = medium
                    2 = medium to low
                    1 = low

Thus, a score of 1 would mean:

                    Highest in cost
                    Slowest in Delivery Time
                    Highest Number of Skilled People Involved
                    Greatest Need for Facilities
                    Greatest Complexity of Development

A high score would mean that the media format was very efficient in terms

of production.

In terms of cost, the ranking order is in reverse:

                    5 = $32,000+
                    4 = $24,000 - $31,999
                    3 = $16,000 - $23,999
                    2 = $ 8,000 - $15,999
                    1 = $ 0 -   7,999.

TABLE 10

P-1 PRODUCTION

Media	Cost		Delivery Time	Personnel Involved	Facilities Necessary	Complexity of Develop.	Ranking		
							T	M	R
T.V. - Commercial	23,000	3	3	2	2	3	13	2.6	10
T.V. - Comm. w̄ Print.	29,000	2	3	1	1	2	9	1.8	22
T.V. - Public	23,000	3	3	2	2	3	13	2.6	10
T.V. - Cable	23,000	3	3	2	2	3	13	2.6	10
3/4 cass. - Sm. Grps.	23,000	3	3	2	2	3	13	2.6	10
3/4 cass. - Print.	29,000	2	3	1	1	2	9	1.8	23
3/4 cass. - Facil.	26,000	3	2	1	1	2	9	1.8	23
3/4 cass. - w̄ Facil. w̄ Print.	32,000	1	2	1	1	1	6	1.2	28
3/4 cass. - On Indiv. Machine	23,400	3	3	2	2	3	13	2.6	10
Theater	28,000	2	2	2	2	3	11	2.2	17
Mot. Pic. - T.V.	28,000	2	2	2	2	3	11	2.2	17
Mot. Pic. - Sm. Grp.	28,000	2	2	2	2	3	11	2.2	17
Mot. Pic. - Sm. Grp. Print.	34,000	1	2	1	1	2	7	1.4	26
Mot. Pic. - Facil.	31,000	1	2	1	1	2	7	1.4	26
Mot. Pic. - w̄ Facil. w̄ Print.	37,000	1	2	1	1	1	6	1.2	28
Mot. Pic. - Indiv. Mach.	28,000	2	2	2	2	3	11	2.2	17
Slide Tape - Sm. Grp.	6,000	5	4	3	3	4	19	3.8	2
Slide Tape - T.V.	6,000	5	4	3	3	4	19	3.8	2
Slide-Tape - Sm. Grp. w̄ Print.	12,000	4	3	2	2	2	13	2.6	10
Slide-Tape - Sm. Grp. w̄ Facil.	9,000	4	3	1	2	2	12	2.4	16
Slide-Tape - w̄ Print. w̄ Facil.	15,000	4	3	1	1	1	10	2.0	21
Slide-Tape - w̄ Individ. Viewer	6,000	5	3	1	1	4	14	3.8	2
Live T.V. (on air)	18,000	3	5	3	2	4	17	3.8	2
Live Radio (on air)	6,000	5	5	4	2	4	20	3.8	2
Computer Assisted Instruction	10,000	4	1	2	1	2	10	2.0	21
Print. 16 Pg. Booklet	6,000	5	3	3	3	4	18	3.8	2
Written Program Learning	5,000	5	2	4	3	4	18	3.8	2
Demonstration	4,000	5	4	4	5	5	23	4.6	1
Simulation	5,000	5	4	3	5	4	21	3.8	2
Oral Presentation	3,000	5	4	5	5		24		

6.25

VI.   Explanation of Distribution Feasibility Table, D-1

Objective

The purpose of the table below is to develop a scale to compare the feasibility distribution of different types of media.

Method

The method for developing the measures for comparing the distribution feasibilities of different media is very similar to the method used in developing production feasibilities. Since the costs vary widely depending on the supplier contacted, the researchers tried to use reasonable estimates in developing the cost per person figures. There are two sets of cost per person figures because of the two different target audience sizes (i.e. 100,000 for the two lower competency levels, and 10,000 for the two higher competency levels.) The figures are supplied to provide a comparison of the dollars necessary to reach an individual at each level.

For the purposes of this study, the researchers developed five measures of distribution feasibility. They are:

● Cost. The cost figures were determined by quotes given by independent contractors. They reflect the other measures studied in that they give an overall perspective on the dollars involved in delivering the content to the learner.

● Speed of Distribution. Here we are looking at the time it takes to get a finished product from the developer to the target audience.

● Number and Skill of People Involved.

● Facilities Necessary for Distribution.

● Complexity of Distribution. Again, the combinations of different media in the same program complicate the task of the development agency.

The scores of each of the measures were added together, then divided by the number of measures to obtain the mean, after which each of the production

media was ranked by mean score. This information is presented in the
Competency level tables for Production, Distribution, and Usability.

The distribution measures were scored on a scale in terms of

Efficiencies:

5 = highly
4 = medium to high
3 = medium
2 = low to medium
1 = low

Speed of Distribution:

5 = highest
1 = lowest

No. and Skill of People:

5 = lowest
1 = highest

Facilities Needed:

5 = lowest
1 = highest

Complexity of Development

5 = lowest
1 = highest

and, Cost:

0-.09 = 5
.10-.19 = 4
.20-.29 = 3
.30-.39 = 2
.40+

Sample Consideration of Distributing Cost:

In this example, the following conditions exist:

3/4 cassette-S.G.: The target group is 100,000; and they should all
be reached in five days; the maximum group size is 40; and in a given
day, the program can only be shown 10 times. In order to distribute
media under these conditions, the disseminating agency would need

50 videotape players and 50 copies of the videotape per 100,000. Since 3/4 cassettes cannot be counted on to be available, the machines may have to be supplied. Therefore, we can make the following calculations:

sample cost of media:

50 videotape players @ $600	= $	30,000
50 videotape copies @ $ 40	= $	2,000
delivery costs on players	= $	2,500
delivery of tape by mail	= $	150
	= $	34,650

similarly, adding a facilitator:

500 hours @ $10 per hour	= $	5,000
($10 based on continuing	$	39,650
education rate in Calif.		
community colleges.)		

Summary

We can summarize this chapter by displaying the ranked media. The display shows the media analyzed from the most to the least feasible way of delivering instruction that will produce a specific competency level.

TABLE 11

D-1 DISTRIBUTION FOR TARGET GROUP OF 100,000, 10,000

Media	Cost Per Person			Speed of Dist.	# of Personnel Required	Fac. Nec.	Comp. of Dist.	Ranking		
	100,000	10,000						T	M	R
T.V. - Commercial	.18	1.80	4	5	4	4	5	22	4.4	2
T.V. - Comm. w̄ Print.	.20	2.00	3	4	2	2	3	14	2.8	14
T.V. - Public	.09	.90	5	5	4	3	5	22	4.4	2
T.V. - Cable	.02	.20	5	5	4	3	4	21	4.2	6
3/4 cass. - Sm. Grps.	.34	3.40	2	3	3	2	3	13	2.6	18
3/4 cass. - Print.	.36	3.60	2	3	2	2	2	11	2.2	22
3/4 cass. - Facil.	.39	3.90	2	2	2	2	1	9	1.8	26
3/4 cass. - w̄ Facil. w̄ Print.	.41	4.10	1	2	1	2	1	6	1.2	30
3/4 cass. - On Indiv. Machine	8.63	86.30	1	2	3	1	1	7	1.4	27
Theater	.69	6.90	1	4	4	4	4	17	3.4	10
Mot. Pic. - T.V.	.18	1.80	4	5	4	4	5	22	4.4	2
Mot. Pic. - Sm. Grp.	.04	4.00	5	3	3	2	3	16	3.2	12
Mot. Pic. - Sm. Grp. w̄ Print.	.06	6.00	5	3	2	2	2	14	2.8	14
Mot. Pic. - Facil.	.09	9.00	5	2	2	2	2	13	2.6	18
Mot. Pic. - w̄ Facil. w̄ Print.	.11	1.10	4	2	1	2	1	10	2.0	24
Mot. Pic. - Indiv. Mach.	3.63	36.30	1	2	3	1	1	8	1.6	27
Slide-Tape - Sm. Grp.	.02	.20	5	3	3	3	3	17	3.4	10
Slide-Tape - T.V.	.20	2.00	4	5	4	4	5	22	4.4	2
Slide-Tape - Sm. Grp. w̄ Print.	.04	.40	5	3	2	2	2	14	2.8	14
Slide-Tape - Sm. Grp. w̄ Facil.	.07	.70	5	2	2	2	2	13	2.6	18
Slide-Tape - w̄ Print. w̄ Facil.	.09	.90	5	2	1	2	1	11	2.2	22
Slide-Tape - w̄ Indiv. Viewer	.35	3.50	3	2	3	1	1	10	2.0	24
Live T.V. (on air)	.36	3.90	3	5	4	4	5	21	4.2	6
Live Radio (on air)	.09	.90	5	5	5	5	5	25	5.0	1
Computer Assisted Instruction	1.50	15.00	1	1	3	1	1	7	1.4	29
Print. 16 Pg. Booklet	.02	.20	5	3	3	5	3	18	3.6	9
Written Program Learning	.02	.20	5	3	3	5	3	19	3.8	8
Demonstration	.10	1.00	4	2	1	5	2	14	2.8	14
Simulation	.10	1.00	4	2	1	5	1	13	2.6	18
Oral Presentation	.05	.50	5	2	2	5	1	16	3.2	12

6.29

TABLE 12

COMPETENCY LEVEL: ORIENTATION

P-2 Media In Order of Production Feasibility		D-2 Media In Order of Distribution Feasibility		C-2 Media In Order of Usability	
Oral Presentation (3,000)	4.8	Live Radio (.09) (.90)	5.0	Comm. T. V. w Print	3.61
Demonstration (4,000)	4.6	Comm. Video-Tape - Brdcast. (.18) (1.80)	4.4	Motion Pic. w Print.	3.59
Simulation (5,000)	3.8	Comm. Video-Tape-Pub.Stat.Brdcast.(.09) (.90)	4.4	3/4 Cass. w Print.	3.47
Written Program Learning (5,000)	3.8	Mot. Pic. - T.V. Brdcast. (.18) (1.80)	4.4	Motion Pic. w Indiv. Mach.	3.41
Printed Booklet (6,000)	3.8	Slide-Tape - T.V. Brdcast. (1.20) (2.00)	4.4	Slide-Tape w Print.	3.37
Live Radio (6,000)	3.8	Live T.V. (.36) (3.60)	4.2	Slide-Tape - Indiv. Mach.	3.33
Live T.V. (18,000)	3.8	T.V. - Cable (.02) (.20)	4.2	Motion Pic. w̄ Facil. w Print.	3.32
Slide-Tape - Indiv. (6,000)	3.8	Written Booklet (.02) (.20)	3.8	Comm. T.V.	3.29
Slide-Tape T.V. (6,000)	3.8	Written Programmed Learning (.20) (2.00)	3.6	3/4 Cass. - Indiv. Mach.	3.29
Slide-Tape Sm. Grp. (6,000)	3.8	Mot. Pic. - Theaters (.69) (6.90)	3.4	3/4 Cass. - w̄ Facil. w Print.	3.28
Video-Tape T.V. Comm. (23,000)	2.6	Slide-Tape - Sm. Grp. (.02) (.20)	3.4	Written Booklet	3.18
Video-Tape T.V. Pub. Brdcast. (23,000)	2.6	Oral Presentation (.05) (.50)	3.2	Motion Pic. - T.V.	3.14
Video-Tape T.V. Cable (23,000)	2.6	Mot. Pic. - Sm. Grp. (.04) (4.0)	3.2	Motion Pic. - Theater	3.13
3/4 Cassette Sm. Grp. (23,000)	2.6	Comm. T.V. - w̄ Print. (.20) (2.00)	2.8	Slide-Tape - Sm. Grp.	3.11
3/4 Cassette Indiv. Mach. (23,000)	2.6	Mot. Pic. w Print. (.06) (6.00)	2.8	Slide-Tape - w̄ Facil. w Print.	3.06
Slide-Tape w Print. (12,000)	2.6	Slide-Tape w̄ Print. (.04) (.40)	2.8	T.V. - Public	3.00
Slide-Tape w Facil. (9,000)	2.4	Demonstration (.10) (1.00)	2.8	T.V. - Cable	3.00
Motion Pic. - Theater (23,000)	2.2	3/4 Cass. - Sm. Grp. (.34) (3.40)	2.6	3/4 Cass. - Sm. Grp.	3.00
Motion Pic. - T.V. (23,000)	2.2	Mot. Pic. w̄ Facil. (.09) (9.00)	2.6	Motion Pic. - w Facil.	2.95
Motion Pic. - Sm. Grp. (23,000)	2.2	Slide-Tape w̄ Facil. (.07) (.70)	2.6	Slide-Tape - T.V.	2.95
Motion Pic. - Indiv. Mach. (23,000)	2.2	Simulation (.10) (1.00)	2.6	3/4 Cass. - w̄ Facil.	2.82
Slide-Tape w Facil. w Print. (15,000)	2.0	3/4 Cass. w Print. (.36) (3.60)	2.2	Slide-Tape - w Facil.	2.75
Computer Assisted Instruction (10,000)	2.0	Slide-Tape w̄ Facil. w̄ Print. (.11) (1.10)	2.2	Live T.V.	2.43
T.V. w Print. (27,000)	1.8	Slide-Tape Indiv. (.35) (3.50)	2.0	Simulation	2.39
3/4 Cassette w Print. (29,000)	1.8	3/4 Cass. w Facil. (.39) (3.60)	1.6	Demonstration	2.34
3/4 Cassette w Facil. (26,000)	1.8	Mot. Pic. - Individ. (3.63) (36.30)	1.6	Motion Pic. - w̄ Facil. w̄ Print.	2.32
Motion Pic. w Print. (34,000)	1.4	3/4 Cass. w̄ Indiv. Mach. (8.63) (86.30)	1.6	Computer Assisted Instruction	2.21
Motion Pic. w Facil. (31,000)	1.4	3/4 Cass. w Facil. w Print. (.41) (4.10)	1.4	Oral Presentation	2.14
Mot. Pic. w Print. w Facil. (37,000)	1.2	Computer Assisted Instruc. (1.50) (15,00)	1.4	Live Radio	1.61
3/4 Cass. w Print. w Facil. (37,000)	1.2				

TABLE 13

COMPETENCY LEVEL: FAMILIARIZATION

P-2 Production Media In Order of Production Feasibility		D-2 Media In Order of Distribution Feasibility		C-2 Media In Order of Usability Feasibility	
Oral Presentation (3,000)	4.8	Live Radio (.09) (.90)	5.0	Written Program Learning	3.79
Demonstration (4,000)	4.6	Comm. Video-Tape - Brdcast. (.18) (1.80)	4.4	T.V. - Comm. w̄ Print	3.73
Simulation (5,000)	3.8	Comm. Video-Tape - Pub.Stat.Brdcast. (.09)(.90)	4.4	Mot. Pic. - Sm. Grp. w̄ Print.	3.72
Written Program Learning (5,000)	3.8	Mot. Pic. - T.V. Brdcast. (.18) (1.80)	4.4	3/4 Cass. - Sm. Grp. w̄ Print.	3.59
Printed Booklet (6,000)	3.8	Slide-Tape - T.V. Brdcast. (1.20) (2.00)	4.4	Motion Pic. - Individ. Mach.	3.54
Live Radio (6,000)	3.8	Live T.V. (.36) (3.60)	4.2	Slide-Tape w̄ Print.	3.52
Live T.V. (18,000)	3.8	T.V. - Cable (.02) (.20)	4.2	Slide-Tape - Indiv.	3.46
Slide-Tape - Indiv. (6,000)	3.8	Written Booklet (.02) (.20)	3.8	Motion Pic. w̄ Facil. w̄ Print.	3.44
Slide-Tape T.V. (6,000)	3.8	Written Programmed Learning (.20) (2.00)	3.6	T.V. - Comm.	3.41
Slide-Tape - Sm. Grp. (6,000)	3.8	Mot. Pic. - Theaters (.69) (6.90)	3.4	3/4 Cass. w̄ Facil. w̄ Print.	3.41
Video-Tape - T.V. Comm. (23,000)	2.6	Slide-Tape - Sm. Grp. (.02) (.20)	3.4	3/4 Cassette	3.41
Video-Tape T.V. Pub. Brdcast. (23,000)	2.6	Oral Presentation (.05) (.50)	3.2	Motion Pic. - T.V.	3.26
Video-Tape T.V. Cable (23,000)	2.6	Mot. Pic. - Sm. Grp. (04) (4.0)	3.2	Motion Pic. - Theater	3.25
3/4 Cassette Sm. Grp. (23,000)	2.6	Comm. T.V. - w̄ Print. (.20) (2.00)	2.8	Motion Pic. - Sm. Grp.	3.25
3/4 Cassette Indiv. Mach. (23,000)	2.6	Mot. Pic. w̄ Print. (.06) (6.00)	2.8	Slide-Tape - Sm. Grp.	3.24
Slide-Tape w̄ Print. (12,000)	2.6	Slide-Tape w̄ Print (.04) (4.0)	2.8	Slide Tape w̄ Print. w̄ Facil.	3.19
Slide-Tape w̄ Facil. (9,000)	2.4	Demonstration (.10) (1.00)	2.8	Written Booklet	3.18
Motion Pic. - Theater (23,000)	2.2	3/4 Cass. - Sm. Grp. (.34) (3.40)	2.6	T.V. - Public	3.13
Motion Pic. - T.V. (23,000)	2.2	Mot. Pic. w̄ Facil. (.09) (9.00)	2.6	T.V. - Cable	3.13
Motion Pic. - Sm. Grp. (23,000)	2.2	Slide-Tape w̄ Facil. (.07) (.70)	2.6	3/4 Cass. - Sm. Grp.	3.13
Motion Pic. - Indiv. Mach. (23,000)	2.2	Simulation (.10) (1.00)	2.6	Slide-Tape - T.V.	3.08
Slide-Tape w̄ Facil. w̄ Print. (15,000)	2.0	3/4 Cass. w̄ Print. (.36) (3.60)	2.2	Motion Pic. w̄ Facil.	3.07
Computer Assisted Instruction (10,000)	2.0	Slide-Tape w̄ Facil. w̄ Print. (.11) (1.10)	2.2	3/4 Cass. w̄ Facil.	2.95
T.V. w̄ Print. (27,000)	1.8	Slide-Tape Indiv. (.35) (3.50)	2.0	Slide-Tape w̄ Facil.	2.88
3/4 Cassette w̄ Print. (29,000)	1.8	3/4 Cass. w̄ Facil. (.39) (3.90)	1.6	Simulation	2.64
3/4 Cassette w̄ Facil. (26,000)	1.8	Mot. Pic. - Individ. (3.63) (36.30)	1.6	T.V. - Live	2.30
Motion Pic. w̄ Print. (34,000)	1.4	3/4 Cassette w̄ Indiv. Mach. (8.63) (86.30)	1.6	Oral Presentation	2.27
Motion Pic. w̄ Facil. (31,000)	1.4	3/4 Cass. w̄ Facil. w̄ Print. (.41) (4.10)	1.4	Computer Assisted Instruction	1.84
Mot. Pic. w̄ Print. w̄ Facil. (37,000)	1.2	Computer Assisted Instruction (1.50) (15,00)	1.4	Live Radio	1.61
3/4 Cass. w̄ Print. w̄ Facil. (37,000)	1.2				

TABLE 14

COMPETENCY LEVEL: LOW PROFICIENCY

P-2 Production Media In Order of Production Feasibility		D-2 Media In Order of Distribution Feasibility		C-2 Media In Order of Usability Feasibility	
Oral Presentation (3,000)	4.8	Live Radio (.09) (.90)	5.0	Simulation	3.32
Demonstration (4,000)	4.6	Comm. Video-Tape - Brdcast. (.18) (1.80)	4.4	Written Programmed Learning	3.29
Simulation (5,000)	3.8	Comm. Video-Tape - Pub.Stat.Brdcast. (.09)(.90)	4.4	Slide Tape w̄ Facil. w̄ Print - S.G.	3.14
Written Program Learning (5,000)	3.8	Mot. Pic. - T.V. Brdcast. (.18) (1.80)	4.4	Motion Pic. w Facil. w Print - S.G.	3.02
Printed Booklet (6,000)	3.8	Slide-Tape - T.V. Brdcast. (1.20) (2.00)	4.4	Slide Tape w Print - Sm. Grp.	2.98
Live Radio (6,000)	3.8	Live T.V. (.36) (3.60)	4.2	3/4 Video Cassette w Print - Sm. Grp.	2.93
Live T.V. (18,000)	3.8	T.V. - Cable (.02) (.20)	4.2	Printed 16-pag. Booklet	2.93
Slide-Tape - Indiv. (6,000)	3.8	Written Booklet (.02) (.20)	3.8	Slide Tape - Indiv. Mach.	2.91
Slide-Tape T.V. (6,000)	3.8	Written Programmed Learning (.20) (2.00)	3.6	Demonstration	2.88
Slide-Tape Sm. Grp. (6,000)	3.8	Mot. Pic. - Theaters (.69) (6.90)	3.4	Motion Pic. & Print	2.80
Video-Tape T.V. Comm. (23,000)	2.6	Slide-Tape - Sm. Grp. (.02) (.20)	3.4	3/4 Cassette - Indiv. Mach.	2.79
Video-Tape T.V. Pub. Brdcast. (23,000)	2.6	Oral Presentation (.05) (.50)	3.2	Slide Tape - Sm. Grp.	2.69
Video-Tape T.V. Cable (23,000)	2.6	Mot. Pic. - Sm. Grp. (.04) (4.0)	3.2	Slide Tape - Sm. Grp. w Facil.	2.67
3/4 Cassette Sm. Grp. (23,000)	2.6	Comm. T.V. - w̄ Print. (.20) (2.00)	2.8	Motion Pic. w Facil.	2.65
3/4 Cassette Indiv. Mach. (23,000)	2.6	Mot. Pic. w̄ Print. (.06) (6.00)	2.8	Motion Pic. - Indiv. Mach.	2.62
Slide-Tape w Print. (12,000)	2.6	Slide-Tape w̄ Print. (.04) (.40)	2.8	Television - Comm. w Print	2.61
Slide-Tape w Facil. (9,000)	2.4	Demonstration (.10) (1.00)	2.8	Slide Tape on Television	2.61
Motion Pic. - Theater (23,000)	2.2	3/4 Cass. - Sm. Grp. (.34) (3.40)	2.6	3/4 Cassette w Print	2.47
Motion Pic. - T.V. (23,000)	2.2	Mot. Pic. w̄ Facil. (.09) (9.00)	2.6	Motion Pic. on Television	2.47
Motion Pic. - Sm. Grp. (23,000)	2.2	Slide-Tape w̄ Facil. (.07) (.70)	2.6	Oral Presentation	2.47
Motion Pic. - Indiv. Mach. (23,000)	2.2	Simulation (.10) (1.00)	2.6	Motion Pic. - Sm. Grp.	2.33
Slide-Tape w̄ Facil. w̄ Print. (15,000)	2.0	3/4 Cass. w̄ Print. (.36) (3.60)	2.2	3/4 Cassette w Facil.	2.32
Computer Assisted Instruction (10,000)	2.0	Slide-Tape w Facil. w Print. (.11) (1.10)	2.2	Television - Commercial	2.29
T.V. w Print. (27,000)	1.8	Slide-Tape Indiv. (.35) (3.50)	2.0	Live Television	2.26
3/4 Cassette w Print. (29,000)	1.8	3/4 Cass. w̄ Facil. (.39) (3.60)	1.6	Motion Pic. - Theater	2.00
3/4 Cassette w̄ Facil. (26,000)	1.8	Mot. Pic. - Individ. (3.63) (36.30)	1.6	Television Cable	2.00
Motion Pic. w Print. (34,000)	1.4	3/4 Cass. w̄ Indiv. Mach. (8.63) (86.30)	1.6	3/4 Cassette - Sm. Grp.	2.00
Motion Pic. w Facil. (31,000)	1.4	3/4 Cass. w̄ Facil. w̄ Print. (.41) (4.10)	1.4	Computer Assisted Instruc.	1.88
Mot. Pic. w Print. w Facil. (37,000)	1.2	Computer Assisted Instruc. (1.50) (15.00)	1.4	Live Radio	1.36
3/4 Cass. w̄ Print. w̄ Facil. (37,000)	1.2				

TABLE 15

COMPETENCY LEVEL: HIGH PROFICIENCY

P-2 Production Media In Order of Production Feasibility		D-2 Media In Order of Distribution Feasibility		C-2 Media In Order of Usability Feasibility	
Oral Presentation (3,000)	4.8	Live Radio (.09) (.90)	5.0	Written Booklet	3.65
Demonstration (4,000)	4.6	Comm. Video-Tape - Brdcast. (.18) (1.80)	4.4	Simulation	3.63
Simulation (5,000)	3.8	Comm. Video-Tape - Pub.Stat.Brdcast.(.09)(.90)	4.4	Motion Picture w Facil. w Print	3.63
Written Program Learning (5,000)	3.8	Mot. Pic. - T.V. Brdcast. (.18) (1.80)	4.4	Written Program Learning	3.46
Printed Booklet (6,000)	3.8	Slide-Tape - T.V. Brdcast. (1.20) (2.00)	4.4	Motion Picture w Facil.	3.46
Live Radio (6,000)	3.8	Live T.V. (.36) (3.60)	4.2	Slide Tape w Facil.	3.38
Live T.V. (18,000)	3.8	T.V. - Cable (.02) (.20)	4.2	Slide Tape w Facil. w Print	3.38
Slide-Tape - Indiv. (6,000)	3.8	Written Booklet (.02) (.20)	3.8	Motion Picture w Print	3.34
Slide-Tape T.V. (6,000)	3.8	Written Programmed Learning (.20) (2.00)	3.6	Motion Pic. w Indiv. Mach.	3.33
Slide-Tape Sm. Grp. (6,000)	3.8	Mot. Pic. - Theaters (.69) (6.90)	3.4	3/4 Cassette w Facil. w Print	3.28
Video-Tape T.V. Comm. (23,000)	2.6	Slide-Tape - Sm. Grp. (.02) (.20)	3.4	3/4 Cassette - Indiv. Mach.	3.25
Video-Tape T.V. Pub. Brdcast. (23,000)	2.6	Oral Presentation (.05) (.50)	3.2	3/4 Cassette w Facil.	3.21
Video-Tape T.V. Cable (23,000)	2.6	Mot. Pic. - Sm. Grp. (.04) (4.0)	3.2	Oral Presentation	3.17
3/4 Cassette Sm. Grp. (23,000)	2.6	Comm. T.V. - w Print. (.20) (2.00)	2.8	3/4 Cassette w Print	2.96
3/4 Cassette Indiv. Mach. (23,000)	2.6	Mot. Pic. w Print. (.06) (6.00)	2.8	Demonstration	2.96
Slide-Tape w Print. (12,000)	2.6	Slide-Tape w Print. (.04) (.40)	2.8	Television - Comm. w Print	2.88
Slide-Tape w Facil. (9,000)	2.4	Demonstration (.10) (1.00)	2.8	3/4 Cassette - Sm. Grp.	2.84
Motion Pic. - Theater (23,000)	2.2	3/4 Cass. - Sm. Grp. (.34) (3.40)	2.6	Motion Picture - Sm. Grp.	2.84
Motion Pic. - T.V. (23,000)	2.2	Mot. Pic. w Facil. (.09) (9.00)	2.6	Slide Tape - Indiv. Mach.	2.83
Motion Pic. - Sm. Grp. (23,000)	2.2	Slide-Tape w Facil. (.07) (.70)	2.6	Slide Tape - Sm. Grp.	2.34
Motion Pic. - Indiv. Mach. (23,000)	2.2	Simulation (.10) (1.00)	2.6	Motion Picture - T.V.	2.79
Slide-Tape w Facil. w Print. (15,000)	2.0	3/4 Cass. w Print. (.36) (3.60)	2.2	Television Comm.	2.75
Computer Assisted Instruction (10,000)	2.0	Slide-Tape w Facil. w Print. (.11) (1.10)	2.2	Computer Assisted Instruction	2.75
T.V. w Print. (27,000)	1.8	Slide-Tape Indiv. (.35) (3.50)	2.0	Slide Tape - Sm. Grp. w Print	2.71
3/4 Cassette w Print. (29,000)	1.8	3/4 Cass. w Facil. (.39) (3.60)	1.6	Television Public	2.59
3/4 Cassette w Facil. (26,000)	1.8	Mot. Pic. - Individ. (3.63) (36,30)	1.6	Television Cable	2.50
Motion Pic. w Print. (34,000)	1.4	3/4 Cass. w Indiv. Mach. (8.63) (86.30)	1.6	Live T.V.	2.25
Motion Pic. w Facil. (31,000)	1.4	3/4 Cass. w Facil. w Print. (.41) (4.10)	1.4	Motion Picture - in Theater	2.00
Mot. Pic. w Print. w Facil. (37,000)	1.2	Computer Assisted Instruc. (1.50) (15.00)	1.4	Live Radio	1.92
3/4 Cassette w Print w Facil. (37,000)	1.2				

CHAPTER 7

Systemic Considerations for the Delivery of a Public Education Program

DCPA's public education program must impact an entire society. More specifically, it will have the effect of educating that society to make the decisions and take the actions that will prepare it for nuclear disaster. In our cost-benefit analysis of the means available to present civil preparedness instruction through the use of certain media, we analyzed target groups primarily as homogeneous classifications differing only in number. This was done largely to quantify competency levels as outputs of the use of certain media. For example, we assumed that the largest number of learners would attain the lowest competency level most effectively, and the smallest numbers would attain the higher competencies. This was simply a logical identification of the usefulness of various instructional media and the achievable competency level for each medium.

In this chapter, we will discuss the organizational support structure required by the use of various media to reach the target groups. This will involve a description of the means by which a curriculum content utilizing various media could be most effective in achieving a public education program's ends. Our perception is that such ends can be met through the use of a variety of institutions and organizations that are components of formal and informal educational systems and other sectors in society. Using such existing educational resources rationally entails finding a means by which such programs as the DCPA public education program can be made available to a specific target group within society. A method of inserting or infusing educational programs, such as the DCPA's, into an already-existing institution is called a delivery system. An educational delivery system is a system of organizational arrange-

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ments, procedures and evaluation feedback networks that enable an educational program to be appropriate to, infused into and utilized by an organization. A generic formulation of such a system has been developed, along with a generic concept of a society-level organization of education. Such generic models/concepts may guide us in generating the arrangements and procedures unique to the DCPA and to the institutions to which the public education program is to be delivered. An earlier project provided an example of a pre-planning process to determine the delivery system most fitting to DCPA and to two agencies that have impact on a segment of the youth population.* The public education program, once infused into selected institutions, would be available to educate a large variety of target groups. Moreover, continued operation of the public education program would be <u>mutually</u> supported by DCPA and the host institution. This mutual support ensures careful monitoring of the program's dissemination, as well as continuous feedback for adjustment purposes.

We should stress here that having the program delivered to an intermediary institution requires the creation and maintenance of institutional and personal commitments. Commitment is established through negotiations that would help develop the specific arrangements best suited to the host institution, and to the needs of the target groups (who are already an audience for the host institution). Such negotiations would also involve whatever plans are necessary for the program's survival.

If these initial statements are kept in mind, we can begin to characterize the public education program and the scope of its impact and begin to evaluate the accessibility of societal systems that could become involved with DCPA's public education efforts.

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*Bela Banathy, et al, 1975, <u>Op. Cit.</u>

We will characterize the societal level of education (i.e., the widest possible impact area for a public education program) as well as stipulating the arrangements that need to be made to deliver public education programs to societal institutions.

I. Systemic Considerations

A societal level conceptualization of education takes into account learning and teaching that is taking place in all facets of a person's and a community's life. Aside from the traditional schooling efforts, there are a large variety of learning situations that may be tapped to educate large segments of the population: home life, the popular media, peer neighborhood groups, civic and religious groups. One's place of employment in particular, provides an opportunity for exposure to learning.*

All of these structures are in place in social and cultural structures that inform and guide most people in their daily lives. This is an important concept not only for a public education program, but for education in general. A public education system (as well as education in general) must have access to all of these educating structures in order to instruct people within the accepted social parameters that define their human activities. Central to these social parameters are cultural values expressed as personal attitudes, or psychological inclinations. These attitudes, in turn, are manifested socially through people joining church groups, youth agencies, civic organizations, etc. and in such activities as public service volunteering, community fund drives and, if need be, evacuations. A public education program that has been infused into these systems would have an initial acceptance that would have a more far-reaching effect than a program that merely distributed in-

*For an elaboration of societal level conceptualization of education, see Appendix C.

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structional items. The relationship between one agency infusing a program into another includes a conscious, system-wide monitoring and evaluation structure. All interested agencies would be continuously involved in the materials being distributed, utilized, measured for effectiveness, and adjusted and revised. A very dynamic relationship takes place between DCPA and the host institution to which the public education program has been delivered. This relationship needs to be carefully explored.

The relationship that provides the organizational and procedural arrangements that would allow an educational program to be an integral part of another organization's activities is a delivery system. It is a system, as opposed to merely an agreement, because for an educational effort to be a continuously relevant and effective process, it needs to be adaptive to a changing environment and it needs to have commitments made to it. Suppose, for example, an educational program is simply distributed to an organization, and is not adaptive to the environment of that organization. Whether the program is used or not would be purely accidental because its utilization is dependent on the efforts of interested individuals. Furthermore, persons in other programs may resist the new program on the grounds that they believe it to be competitive. Even these two points against merely distributing instructional materials assume that the host system is open to the new program. The logical result is a fragmented, unorganized effort.

It should be emphasized that a delivery system is a relationship on the institutional level. Once we have elaborated upon this particular level, it is necessary to have analyses made of the other levels that will affect and be affected by the institutional relationships described here.

7.4

A. The Systems Levels of Education and the Delivery System Structure

Institutions can be described as being either "closed" or "open."
Actually, when one tries to apply these terms to the real world there are no
pure examples of either case. We can speak of gradations between these poles.
An understanding of the degrees to which societal systems may be open or
closed, however, is important because it will be used to constrain and adjust a
model of the delivery system to the unique characteristics of the host insti-
tution and the target group served by that institution through negotiations.
These negotiations, carried out between DCPA and the host institution, cannot
be determined a priori as to their content and the particulars of the specific
delivery arrangements the institutions choose. However, we can identify the
sorts of things that the negotiations need to attend to as they adapt the
delivery system model to the institution's needs, goals, objectives, resources,
and attributes.

The adequate analysis of all of these variables will be required in the
design of a means of inserting the public education program into the host
institution's educational effort. The pre-analysis for delivery system negotia-
tions also requires an examination of the resources that need to be shared.
Considerations of the alternative approaches to take in order to impact a
target group are all essential in negotiating a delivery system design.

Also, an analysis of the possibility for a public education system in-
cludes an analysis of the context of the program. The immediate systemic con-
text for delivery is institutional. Such a contextual analysis needs to go
much further, however. Indeed, four levels of analysis are apparent in design-
ing and operationalizing the procedures and organizational relationships of
the delivery system with itself and with its peer systems, subsystems and supra-
systems. Although these levels can be developed in a variety of ways, we might

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first define them from the perspective of the learner operating in a variety of social/political ways. These levels will also be defined from the perspective of educational systems* attempting to transform the experiences and relationships described by the following levels:

● Societal - Learning individuals express certain norms and values that define a community that is organized along political, cultural and status-system lines. All of these systems are relevant to this study only insofar as they affect, transform, or create educational information that can be directed at the appropriate target audiences. Analysis on this level would define the broader societal and cultural contexts in which institutional instructional and learner level functions take place.

● Institutional - Specific allocations of available and projected resources, resource requirements and constraints that will restrict or open up the program delivery relationship between DCPA and that institution. Analysis on this level would assess the systemic possibility for such a delivery.

● Instructional level - Analysis on this level would provide information concerning the overall curriculum framework, the instructional training resources and the arrangements that are necessary for instruction and learning.

● Learner level - Meeting needs, objectives and other plans in using instructional resources in order to learn tasks and become educated. Analysis on this level would provide data for evaluating the effectiveness of the instruction.

We may provide a more elaborate description of these levels by showing the flows of information, goals, decision-makers and organizations working at these different levels. It should be clear, however, that the levels defined above are different from pyramidical hierarchy of organizations in that the individual learners appear in the above definitions at both the macro-level and the micro-level rather than only at the micro-level. At the macro-level, the individual is a bearer of cultural values that are expressed in and through a variety of organizations such as family, religion, school, youth agency and senior-citizens groups. In many cases, values may be expressed

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*Bela Banathy, "On the Contribution of Systems Science to Educational Development," Presented to the American Association for the Advancement of Science, 1976.

via the social relationships the learner has formed with these institutions.

At the micro-level is the individual learner with his or her very specific

needs and objectives, the most relevant of which is a desire or a need to

learn. Values, beliefs and the institutions expressing these values and

beliefs may only be dimly or partially understood. The focus at this level

is day-to-day lived experience while political and social factors become a

background to learner/instructor relationships. Both macro-and micro-levels

contribute to and draw from the institutional and instructional levels. Hence,

DCPA would infuse its program into the institutional level which, in expanding

the instructional level, would reach and transform the macro-level and the

micro-level simultaneously. Public education has to be infused into a variety

of different organizations in such a way that it helps learners solve problems and

complements whatever goals the organization is working toward. We can now

present an analysis of the four educational levels from the perspective of

the organization:

- The Societal Level, at which a macro-system of education is proposed
  that would link up the various sectors of the society through coordi-
  nated and cooperative arrangements for the sharing of their educa-
  tional resources.

- The Institutional Level, at which the various formal and informal
  educational and other societal systems operate that have educational
  resources. These systems would be coordinated at the macro-system
  level for the sharing and thus more effective use of their educational
  resources. These systems provide the policies, plans, structure, and
  arrangements required to administer and account for the use of educa-
  tional resources at the instructional and learning experience levels.

- The Instructional Level, at which we plan, design, and develop
  instructional/learning arrangements, and make plans for the use of
  resources that would facilitate learning and the development of the
  individual.

- The Learning Experience Level, which is the primary level of the systems
  complex, at which learner systems operate. These constitute the nucleus
  of the systems complex. Around the learner system are built the in-
  structional systems, supported by the various educational sectors of
  the society that have the capability and resources to facilitate learn-

ing and that link up with each other to enhance the education of the individual and the society.

Our discussion of these levels is no longer concerned directly with persons, values, and their institutional expressions. The learner and his or her values have been re-conceptualized as a system. This enables the educational planner to define social relationships as inputs and outputs, to identify components that carry out certain functions and to identify and define the governing or controlling entity at each level. Very general conceptions such as "interdependence" and interaction" can now be defined as flows of information, processes and functions. When these have been identified, we can proceed to talk about the organizational arrangements that would provide support and energy for the integration and unification of DCPA's public education program within the context of different formal and informal educational situations. Individuals can be identified whose decisions and support act as catalysts to the development of the delivery system. Areas that will require monitoring and feedback can be identified.

We can now perceive the points at which change may occur to provide for a new educational experience for learner and teacher. DCPA's public education program now has a generic description of its areas of impact. We have already said that the direct DCPA interface, as a system, will be on the institutional level. This level, along with the instructional level, is bureaucratic and technological in nature. It contains decision points and channels for disseminating those decisions.

We may regard these levels as the context for the discussion of the delivery system itself. The delivery system is a system intended to synthesize innovations from one organization into another organization. The effect is to mobilize the organization's capacity for ordered change, thereby ensuring the coherent, unproblematical, stable delivery of a new program into a host in-

stitution.

B. The Delivery System Design

The environment of both DCPA and the institution to which the public
education program will be delivered, as well as the internal structure and
the process structure of both need to be defined with data gathered from
feasibility and managerial studies. We may discuss these organized bodies
of categorized information as models.* The first stage of information-gathering
is to analyze the data of the environment. We can develop an organization's
environmental boundaries by analyzing their functions on the macro-societal
level. We may define the systems environment by the following:

1. the verified problem or need;

2. a rationale for considering the significance and validity of the
    problem or the feasibility of solving it;

3. an analysis of potential impact;

4. the selected overall approach; and

5. specifications of the expected outcome.

The structural model of the delivery system guides DCPA and the host
institution in identifying those components and their functions that would
contribute to the predetermined goals of the public education program. Such
an effort includes examining arrangements that are generically relevant to the
innovation of this type of program. This model should also include a specifi-
cation of alternate goal-serving functions. Moreover, an evaluation of the
structural capacity of the delivery system's components to transform the
structure of the host institution in such a way that the public education pro-
gram can be integrated into the host institution's programs is necessarily

*Bela Banathy, "Change Systems in Education: A Systems Theory-Based View,"
 Prepared for the society for General Systems Research, 21st Annual Meeting,
 Denver, 1977.

included in the system. Such an evaluation is concerned with interaction patterns between the delivery system's components and sub-systems. The goal of this evaluation is to ensure that the DCPA program will be integrated into the host institution with a commitment that maintains the continued operation of the public education program.

A third model is based upon the flows of information that will take place within the delivery system. Such information flows comprise input, transformation, output, feedback and adjustment. These terms are descriptive of the continuous, orderly evolution of the delivery system's process. New information is screened, decoded and related to the transformation process. The latter phase involves systematizing, integrating, facilitating and controlling the process of making the public education program a continuously evolving part of the host institution. Outcome will provide the necessary information for determining whether there is a harmonious relationship between the new program and the system delivering that program and between the delivery system and the components, functions and values of the host system.

These models (environmental, structural and process) serve to guide the design of the delivery system best suited so that the final design is to the institution or other organization being considered. It should be stressed that any organization is unique in the type of relationships it has with its environment and in its internal relationships and procedures. Furthermore, the organization is unique in the ways in which it is developing and determining its evolution. This uniqueness must be taken into account in a sensitive and continuously adaptive way. We will describe the bodies of information that systematize those unique characteristics and must be considered during the design process. This information will be expressed in terms that define the delivery system. They are descriptions of:

- *innovation, integration and change characteristics* that have to be analyzed and defined through the negotiation process of the institutions;

- the modes of the adaptation process to be designed; and

- the procedures for implementing change or innovations and management and evaluation.

These analyses, when developed, lead to a definition of the delivery system. They cover specific bodies of information that describe the components of the subsystems, e.g., need, expected output, specific operations, resources and arrangements for further information development; estimates of long term and short-term impact, feasible adaptation models, the most promising alternate adaptation arrangements and a plan for managing these processes. Provision has to be made for orienting or developing all the people who will participate in and operate in the implementation of the delivery system (these are people both within the organizations and outside the environment of the organizations). Moreover, financial resources, educational resources, and physical resources will have to be acquired and guided.

To carry out all of the necessary information-gathering, personnel development, infusion management and program implementation three subsystems would be required (generally speaking):*

- A *change-definition* and *display* subsystem.

- A *design* subsystem.

- A *change-infusion* and *management* subsystem.

We might picture these systems and subsystems in the following way:

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*Bela Banathy, 1977, Op. Cit.

Figure 12
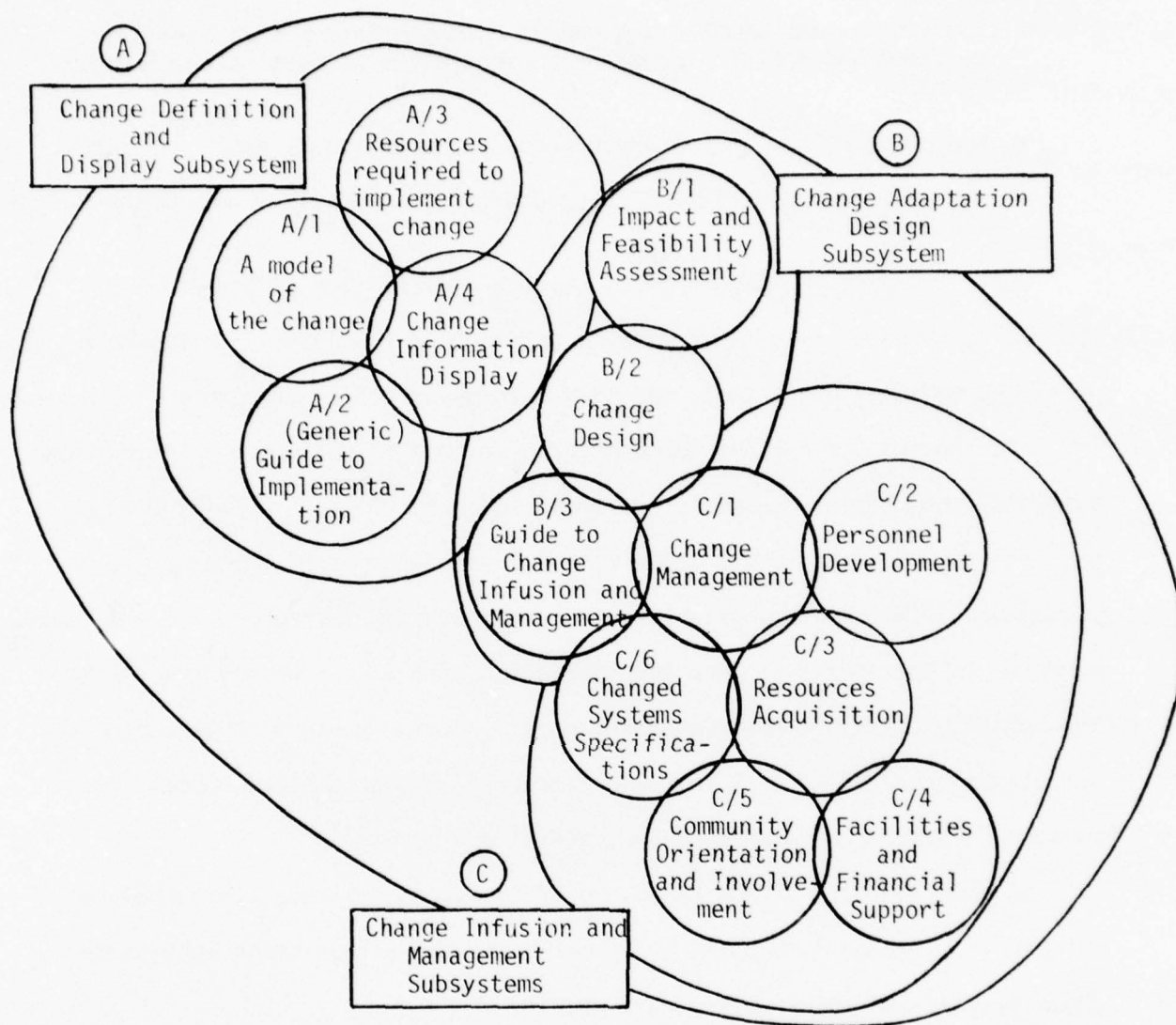
All of these subsystems, components and their interrelationships repre-
sent a logical image for a delivery system. In the actual design, development
and implementation of a delivery system, this logical image represents a sound
basis for asking questions about a future arrangement. These questions concern
face-to-face, day-to-day work that needs to be done to deliver the public
education program. One question is, what will happen to the structure of the
organization? How will the outcome affect the goals of the organization's
systems and the goals the organization has in serving its clients? How may

the required changes be managed? Are they adequate to provide a permanent program?

As these and other questions are put forth and answered, the abstract structures outlined here will take concrete shape. When the public education program is then delivered to the host organization, the various instructional materials will be set within an institution that is financially, organization-ally and behaviorally committed to the program. This is the theoretical goal of the delivery system.

II. The Delivery System and Host Institution Interrelationship

A delivery system transforms the structure and process of an organization so that it can introduce a new educational program to an audience in an ap-propriate way. By using structures imbedded in society the program can avoid seeming external and possibly alien. Organizations recognized and accepted by societal groups could present public education programs that are valid and effective from the perspective of DCPA, and that are complementary and sig-nificant from the perspective of their membership.

We may characterize a societal or target group by the organization that is most accepted and recognized by the group. Our identification of the target group, then, involves an identification of organizations. Moreover, in order that this identification be useful, we must assess the institutions that will have the capacity and the potential for successful delivery of the public edu-cation program. To accomplish this involves the formulation of criteria ap-plicable to an educational system. The agents who make up the staff of the organization must be taken into account in any discussion of the groups of people being affected through a mediating organization. This creates addi-tional problems in the development of a delivery system. For example, if one

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determines that there is a need for a certain group to have some competency
level in surviving a nuclear attack, it is necessary that those who run the
organization that is identified as an educational system perceive that need
as vital. This largely means that a "gut" or attitudinal response has to be
appealed to through the negotiating process (even though that process is
largely one of rational planning). Such factors, however, cannot be discussed
in an objective way here, given the rather broad level of our discussion.
Nonetheless, this consideration tempers whatever sorts of conclusions we might
derive.

A. Assessment criteria for organizations regarding their potential for
    delivery

In 1975, Far West Laboratory conducted a feasibility study of various
organizations' potential for diffusing public education.* This study assessed
the feasibility of formulating some organizational arrangement whereby DCPA
and two voluntary organizations could be shown to be compatible enough to
arrive at a practical linkage arrangement (a delivery system may be construed
as a type of linkage).

The criteria for this feasibility study were (broadly speaking):

● goal overlap;

● compatibility of system structure; and

● willingness on the part of key figures to cooperate in an inter-
  organizational relationship at some level of intensity.

This feasibility study was done on two nationally-known organizations:
the Boy Scouts of America (presently known as Scouting, USA) and the 4-H
Program of the Department of Agriculture. However, many of the organizations

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*Bela H. Banathy, et al., 1975, Op. Cit.

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in society may be state-wide or may only exist locally. Another project, not yet completed, used similar criteria linking a national organization with local school districts. Hence these criteria seem to be quite viable, although they might be interpreted or emphasized differently in different cases.

We might now break down these broad criteria to a more operational level.

- Goal overlap is somewhat difficult to analyze. Some of the linkage research we have done leads us to believe that two organizations with similar goals might eventually start competing with one another. (This is especially true if one organization is relatively small, and fears co-optation by the larger organization.) The fact that the goals are complementary need not simply mean identical goals. Rather, it means that a clear demarcation can be made concerning the organizations' respective domains of goal-directed activity and responsibility. Moreover, complementarity signifies that a new product (e.g., the organizations' arrangements) will emerge, by combining the goals of the two organizations in a systemic way. Complementarity of goals, therefore, is a dynamic relationship between the values and activities of two cooperative organizations seeking more formal relationships.

- Comparability of systems characteristics is relatively more specific as a criterion because it refers to the organization's relationships to its audience; the ways in which it disseminates information, or instruction; the scope, or domain of its activities; and other social and economic factors. Internally, the relationships between management (or some other form of institutional control) and the staff must be considered. How are the educational programs managed? How are personnel allocated for jobs? What sorts of marketing techniques are used to assess the efficiency of the organization's educational operations? These sorts of questions will reveal the feasibility of the delivery system. The actual infusion process and the implementation process that follows the program's infusion may reveal other difficulties. However, the feasibility study that applies these criteria will enable some to be made of the chances for successful delivery of the public education program.

One aspect of assessment concerns the willingness of an organization's staff to participate in the delivery systems' design planning. Moreover, such willingness should take into account an awareness that the infusion process will involve a transformation of the internal component relationships of the host institution. A delivery system is a means for changing the relationships of system components by "filling a space" with a new component created by the negotiations process. New relationships between components, such as offering

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new training for personnel, and rearranging the use of resources so that this process can be carried out all have the potential for undermining initial enthusiasm. The consequences of the delivery system must therefore be clarified, and, if necessary, made palatable. Palatability is created largely by allowing the host institution to make a significant contribution to plans that would determine the formality and extensiveness of its relationship with DCPA.

B. The Internal and External Social Relationships of the Organizations

There are other systems characteristics that would determine the viability of a delivery system. The organizations from which the above assessment criteria were derived are large, national, highly developed, and highly sophisticated as to design and personnel expertise. There are other organizations more deeply embedded in the local context that require a different design perspective. Senior citizen clubs and other civic organizations may receive funding through their local or state government. There are also a variety of other organizations that are strongest as local organizations, even though they are nationally known, i.e., Kiwanis, Lions, Elks, and others that are socially oriented. They may provide a way of bringing an educational structure to people who are highly visible in the community. However, the decision-making behavior of such groups would be very difficult to predict in an extensive cycle of pre-planning negotiations, design planning, delivery system operations and implementation of the mediation system.

Most of these organizations are embedded in the local culture and are made up of members who are volunteering a very small amount of their personal time. A large proportion of the relationships in religious organizations are unconscious relationships that are also exceptionally difficult to impact.

As far as local organizations are concerned, such things may be deter-

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mined only through research and analysis. Management, resource allocation and so forth, are carried out intuitively, or without the corporate self-consciousness one would find in organizations with a national focus. Thus, the delivery system model, dependent as it is on an elaborate structure for its operations, may be simplified to the point where nothing more than letters or phone calls would establish a sufficient relationship.

C. Methods of Impacting Variety of Organizations

If DCPA were to deliver programs to national organizations with local chapters, a "ripple effect" might be started that would enable local associations to draw on those local chapters (e.g., the Red Cross, the Boy Scouts, etc.) as resources. One problem may be that these local organizations may not be willing to provide education on evacuation procedures in case of nuclear attack. This is especially true, for example, in the case of craft unions, which are notoriously insular despite their national focus.

Schools, the local media, the fire service, local police, and local government are more highly organized and, therefore, are more likely to accept programs delivered to them, given the collaborative efforts of the relevant state or local organizations. However, the societal target group affected by these organizations may be very limited. Many public service organizations are far too single-goal-directed to allow for delivery of the public education program. They may be altogether too closed-off from their community to achieve the desired effect.

Other problems attend the federal agency's attempt to directly affect the lower-level functionings of macro-societal types of instructions. In many cases, it is certain that a new program would overload the existing instructional staff. Furthermore, additional instructors from the outside, may

produce a good deal of conflict even if it is financially feasible to hire them. This may not be the case, however, if the potentials for conflict are carefully planned for by the delivery system negotiating team.

This logical analysis provides us with the following hierarchy of organizations, beginning with those that are most amenable to a delivery system:

- National Organizations with federal affiliations and with local chapters: e.g., The Red Cross, The Boy Scouts, The Girl Scouts, 4-H.

- National organizations with little federal affiliation, but with elaborate, systematically-managed structures: e.g., social service fraternities, labor unions, public media corporations.

- State government agencies: e.g., state community colleges (which might hold seminars for teachers, fire service personnel, or others who could produce a multiplier effect), senior citizen's clubs, youth groups.

- Local government: e.g. police, fire service, school districts. Permanent organizations on the micro-societal level: religious organizations (which may also have national affiliations, but no real power to determine the programs of local churches and temples), labor union locals, locally-organized service and civic clubs.

- Public and private employers. A public education program may be appended to the already existing (or planned) employee training program concerning nuclear disaster.

- Ad-hoc organizations: e.g. neighborhood youth clubs (sponsored by parents or schools), community neighborhood centers (which probably have some input from local government agencies).

All of these groups could be impacted by any public education program. Some can be impacted directly through formal arrangements; for others, an informal arrangement may be sufficient. To determine which of these is best would require at least as extensive a study as the feasibility analysis made of the Boy Scouts and 4-H. Logically, one may expect that the more sophisticated, well-defined, autonomous, and systematically-managed the organization, the more formal the delivery system has to be. Reaching the smaller, less extensive organization requires other arrangements.

Obviously, one cannot expect to directly impact civic groups or neighborhood associations. Three indirect ways suggest themselves:

- National organizations with local chapters that have well-defined and functioning information systems would provide a most direct route into society. However, there are national organizations with local chapters that are independent or semi-autonomous. DCPA may deliver a program to the umbrella organization; that organization, in turn, may have to deliver the program to the local organizations, with the DCPA acting in the role of facilitator or guide. Such a role is one that will eventually diminish, leaving only a monitoring and evaluation effort.

- The second indirect effort is called a "ripple" or "multiplier" effect. Essentially, DCPA would deliver a program to a national or state institution (e.g., a college, or a professional association) that can impact representatives of a number of groups, which, in turn, can impact a large number of people. Having a visible, socially-respected and integrated local group with a public education program may produce another sort of ripple effect; other organizations should be encouraged to use that local organization as an educational resource. Here, again, DCPA may act as a facilitator, or co-sponsor, and then, work as a monitor or evaluator.

- Some institutions that already have a successful public education program, may (with some revisions) be able to deliver that program to another institution. This might produce an institutional level ripple effect by which institutions may (with DCPA guidance) deliver an adopted public education program to other institutions. Here again, it is essential that DCPA have some awareness of the effects of such an effort to assure high standards in terms of efficiency and effectiveness.

DCPA can, according to its budget, determine which of these options or variations of these options is most logical and simplest to approach as a first step toward educating the target groups. We have suggested here that such groups cannot be construed as merely homogeneous collections of atomic individuals. The target groups are organized in a variety of ways. Hence, there is a wide range of systems types that have to be affected. We have suggested in a general and logical fashion the criteria one might use for projecting the viability of delivering a public education program to one organization rather than to another. We concluded that the organizations that are most scientifically managed and have the most well-defined functions, components, flows of

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information, and resource and personnel allocations are most accessible. Since the type of educational system that is most appropriate is defined more by social or cultural boundaries than by corporate boundaries, the arrangements may have to be accordingly complex. Moreover, if there is a heavy dependency upon personal decisions within an organization, predicting the future adaptiveness of that organization to new needs, new information, or new policy becomes difficult. But, in practical terms, the more formal organization will have more funds, better-trained personnel and better facilities than a larger organization.

Summary

In this chapter, we examined public education target groups in terms of the organizations that serve or express the values and beliefs of those target groups. We analyzed the different levels at which these organizations and learners organize themselves in society: (a) the societal level, (b) the institutional level, (c) the instructional level and (d) the learner level. A model of the delivery system that might be used to integrate a DCPA public education system into the programs of the organizations described was presented and an assessment was made of the efficacy of using these organizations to provide civil preparedness training and education. Finally, some projections were made as to the effort that would be required to use the delivery system described in this chapter.

CHAPTER 8

Summary and Recommendations

What we have completed in this analytical report is (1) a detailed examination of the concept of a public education program that resulted in a definition of public education and specifications of what should be included in a generic curriculum ; and (2) an examination of the feasibility of such a program that takes into account the cost-effectiveness of the technologies useful for training and educating the target groups, and characterizes the appropriate target groups through the organizational and societal systems that would utilize the public education program.

The completion of these analyses provides the first steps in the process that would bring the public education program into practice.

In Chapter 7, we described the informal and formal educational sectors of society that would utilize the public education program to impact the target groups. Different organizations and institutions in these sectors might produce different results (at different costs). The varying capacity of those institutions to have a public education program infused into their system needs to be analyzed. Moreover, the ability of those institutions to manage and maintain such a program needs to be examined.

Delivery systems need to be designed in order for institutional and organizational systems to have a public education program infused into their educational system. The design of such a delivery system, however, must be thoroughly examined. In particular, the optimal delivery system design needs to be examined under the conditions described in Chapter 1. Specifically, those conditions are peacetime (a period of extensive training), crisis

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expectancy (a period of intensive education), crisis activation (a period when only immediately applicable instruction is possible). The generic delivery system described in Chapter 7 should be operationalized to meet the conditions described in these time periods.

The logical corollary to the design of a working delivery system is an analysis of the capacity of alternate delivery systems to infuse public education program into a wide spectrum of organizations, so that the program could become societal in scope. Organizations such as organized labor, neighborhood community units, community leadership, service-related municipal, state or federal agencies, youth agencies, etc. need to be examined.

The curriculum specifications, the curriculum model, and the content specifications described in Chapters 4 and 5 require further development for implementation. A generic instructional/learning model and strategies to allow for society-wide learning to occur should be designed. An area of the curriculum could be specified to develop such a model.

Another direction for the development of these curriculum specifications and content areas follows from the instructional/learning model just described. A specific target group should be examined with regard to its educational development during peacetime, crisis expectancy and crisis activation. A prototype model of a public education program should be designed for each of these time-periods for a given target group.

These recommendations for further study would bring the public education program concept developed here closer to being a concrete effort of DCPA.

APPENDIX A

Summary of Project Events

Project Events are described here in chronological order.

The project was initiated on August 1. The project was part of the Instructional and Training Systems Program (ITS) of Far West Laboratory for Educational Research and Development. Bela H. Banathy is the director of ITS and Principal Investigator throughout the project. Bill Bates was the Information Systems Specialist.

In early August, Ralph Garrett, Research Social Scientist at DCPA and COTR for the project, visited the Laboratory for an in-depth discussion of the project.

In early September, Tony Stigliano joined the project as a Program Associate.

On October 19, 1976 James Kerr, Staff Director, Emergency Operations System Division of DCPA, visited the Laboratory and the project and discussed with the project staff the implications of the research to date.

At the end of October, Steve Waterman entered the project as an Information Systems Specialist to collect and organize data for the project.

On November 1, 1976, the first quarterly report was submitted. This report described the implementation of tasks relevant to analyzing peacetime, and crisis-activated public education.

In the following interim period there were audio tape communications with Mr. Garrett. On December 9, project staff members attended a DHEW-DCPA meeting with Mr. Garrett in San Francisco.

On December 13, Mr. Garrett and the project staff visited DCPA Region 7 headquarters in Santa Rosa. The purpose of this visit was to gain further knowledge of the policy-making and planned implementation of the various civil-preparedness concepts.

On December 14, project staff visited Golden Gate University for an interview with Rudolf Koller. Golden Gate was at that time engaged in conducting workshops in earthquake preparedness.

Bill Bates was made Project Coordinator in late December.

The Second Quarterly Report was submitted on January 12, 1977. It described the implementation of tasks relevant to defining behavioral and curriculum models, and public education goals.

Further communications with DCPA were made through audio tape and telephone.

On the 28th and 29th of March, a synopsis of the project work done thus far was presented to DCPA staff members, other DCPA contractors, and other interested parties in Washington, D. C. The presentation was made by Tony Stigliano, Acting Project Coordinator.

The Third Quarterly Report was submitted on the 15th of April, 1977. The Report described the work done for tasks that synthesized behaviors into curriculum specifications and the development of curriculum content examples.

During this period Steve Waterman left the project and Parki Hoeschler replaced him. Tony Stigliano became Project Coordinator.

The Fourth Quarterly Report was submitted on the 15th of July. The work represented by this report covered tasks relevant to specifying alternative means of choosing instructional media for the public education program and a cost-benefit analysis of those means.

July and August were devoted to the analysis and synthesis of the organizational systems required for the dissemination of the public education program.

On September 9, Bela Banathy visited and discussed the project with James Kerr and Ralph Garrett in the DCPA Office in Washington.

The first draft of this final report was prepared during September and submitted for review on the 20th of September.

A.3

APPENDIX B

The Application of the Cost-Benefit Rankings

We have presented an analysis in Chapter 6 that shows that the delivery
system most appropriate for developing different competency levels in a se-
lected target audience should be approached by considering the relative ad-
vantages of various delivery systems in terms of: 1) Production Feasibility,
2) Distribution Feasibility, and 3) Usability. The relative advantages in
these terms were constructed by considering the characteristics of media in
relationship to each competency level. The first section of the chapter ex-
plains how and why each delivery system was studied to develop the recommenda-
tions that will appear here. Briefly, the order of appropriateness of each
delivery system to each competency level was developed by adding the combined
mean score of Production Feasibility, and Distribution Feasibility to the
Usability score, and arriving at an average score by which to compare the
various delivery systems. The reason that the Production and Distribution
scores are combined is that they share similar constraints in terms of people,
time, and money involved whereas Usability is based on the media's contribution
to the development of competency level skills by a target group. Surely, the
most important criterion for measuring a system is its effectiveness. Even if
the system is inexpensive to produce and simple to manage, it is worthless if
it does not effectively change the behavior of the target audience. The Chap-
ter was summarized by the four tables at the end of the chapter showing a
display of the Production, Distribution, and Usability Feasibilities, in
terms of four levels of competency. That display showed the different charac-
teristics of various delivery systems of instructional media as they apply to

the different parts of the production, distribution, and learner use of the product cycle.

On the following pages are the suggested delivery systems of instructional media based on data developed in the first part of Chapter 6. These suggestions should act as guidelines in the process of choosing an instructional package. When the scores were close, the competing media formats were included. It should still be emphasized that what follows is only a guideline to the developer in considering the feasibility of different media delivery systems. The recommendations that follow are targeted to the situation of a family having been evacuated from a risk area--in this case, a snowstorm.

LIFE COMPETENCY: SURVIVING IN COLD WEATHER DURING AN EVACUATION

TARGET POPULATION: 100,000

ORIENTATION LEVEL

Recommended instructional media systems, ranked in order of appropriateness:

1. An 18-minute slide/tape program delivered by commercial broadcast systems.

2. A 16-page booklet distributed by mail to the target audience.

3. An 18-minute videotape program delivered by commercial broadcast systems.

4. A self-instruction programmed learning booklet distributed by mail to the target audience.

5. An 18-minute videotape program delivered by the Public Broadcasting System.

*The next two media systems are included because of their closeness of score:

6. (tie) An 18-minute motion picture delivered over commercial broadcast systems.

6. (tie) An 18-minute live broadcast program delivered over commercial broadcast systems.

TABLE 16

ORIENTATION COMPETENCY LEVEL

Media	Comb. Mean Score Pro. & Distrib.	Usability Feasibil. Score	Ranking		
			T	M	R
T.V. - Commercial	3.5	3.29	6.79	3.40	3
T.V. - Comm. w̄ Print.	2.3	3.61	5.91	2.96	
T.V. - Public	3.5	3.0	6.5	3.30	6
T.V. - Cable	3.4	3.0	6.4	3.20	
3/4 cass. - Sm. Grp.	2.6	3.0	5.6	2.80	
3/4 cass. - Print.	2.0	3.47	5.47	2.74	
3/4 cass. - Facil.	1.7	2.82	4.52	2.26	
3/4 cass. - w̄ Facil. w̄ Print.	1.3	3.28	4.58	2.29	
3/4 cass. - On Indiv. Mach.	2.1	3.29	5.39	2.69	
Theater	2.8	3.13	5.92	2.97	
Mot. Pic. - T.V.	3.3	3.14	6.44	3.22	7
Mot. Pic. - Sm. Grp.	2.7	3.13	5.83	2.92	
Mot. Pic. - Sm. Grp. Print.	2.1	3.59	5.69	2.85	
Mot. Pic. - Facil.	2.0	2.95	4.95	2.48	
Mot. Pic. - w̄ Fac. w̄ Print.	1.6	3.32	4.92	2.46	
Mot. Pic. - Indiv. Mach.	1.9	3.41	5.31	2.66	
Slide Tape - Sm. Grp.	3.6	3.11	6.71	3.36	4
Slide Tape - T.V.	4.1	2.95	7.05	3.53	1
Slide-Tape - Sm. Grp. w̄ Print.	2.7	3.37	6.07	3.04	
Slide-Tape - Sm. Grp. w̄ Facil.	2.5	2.75	5.25	2.63	
Slide-Tape - w̄ Print. w̄ Facil.	2.1	3.05	5.16	2.58	
Slide-Tape - w̄ Indiv. Viewer	2.9	3.33	6.23	3.12	
Live T.V. (on air)	4.0	2.93	6.43	3.22	7
Live Radio (on air)	4.0	1.61	5.61	2.81	
Computer Assisted Instruction	1.7	2.21	3.91	1.96	
Print. 16 Pg. Booklet	3.7	3.18	6.88	3.44	2
Written Program Learning	3.8	2.91	6.71	3.36	4
Demonstration	3.7	2.34	6.04	3.02	
Simulation	3.2	2.39	5.59	2.80	
Oral Presentation	4.0	2.14	6.14	3.07	

LIFE COMPETENCY: SURVIVING COLD WEATHER DURING AN EVACUATION

TARGET POPULATION: 100,000

LOW PROFICIENCY LEVEL

Recommended instructional media systems ranked in order of appropriateness:

1. A self-instructional programmed learning booklet delivered by mail to the target population.

2. An 18-minute slide/tape program delivered by commercial broadcast systems.

3. A 16-page booklet delivered by mail to the target population.

4. A live demonstration delivered in person to small groups.

5. A structured simulation with small groups.

*   The next Media System is included because of its closeness of score with the prior selection.

6. An oral presentation to small groups.

TABLE 17

LOW PROFICIENCY COMPETENCY LEVEL

Media	Comb. Mean Score Pro & Distribution	Usability Feasibil. Score	Ranking		
			T	M	R
T.V. - Commercial	3.5	2.29	5.79	2.90	
T.V. - Comm. w̄ Print.	2.3	2.61	4.91	2.46	
T.V. - Public	3.5	2.00	5.5	2.75	
T.V. - Cable	3.4	2.00	5.4	2.7	
3/4 cass. - Sm. Grps.	2.6	2.00	4.6	2.3	
3/4 cass. - Print.	2.0	2.47	4.47	2.24	
3/4 cass. - Facil.	1.7	2.32	4.02	2.01	
3/4 cass. w̄ Facil. w̄ Print.	1.3	2.93	4.23	2.12	
3/4 cass. - On Indiv. Machine	2.1	2.79	4.89	2.45	
Theater	2.8	2.17	4.97	2.49	
Mot. Pic. - T.V.	3.3	2.47	5.77	2.89	
Mot. Pic. - Sm. Grp.	2.7	2.33	5.03	2.52	
Mot. Pic. - Sm. Grp. Print.	2.1	2.80	4.90	2.45	
Mot. Pic. - Facil.	2.0	2.65	4.65	2.38	
Mot. Pic. - Fac. w̄ Print.	1.6	3.02	4.62	2.31	
Mot. Pic. - Indiv. Mach.	1.9	2.62	4.52	2.26	
Slide Tape - Sm. Grp.	3.6	2.69	6.29	3.15	
Slide Tape - T.V.	4.1	2.61	6.71	3.36	2
Slide-Tape - Sm. Grp. w̄ Print.	2.7	2.98	5.78	2.89	
Slide-Tape - Sm. Grp. w̄ Facil.	2.5	2.67	5.17	2.59	
Slide-Tape - w̄ Print. w̄ Facil.	2.1	3.14	5.24	2.62	
Slide-Tape - w̄ Indiv. Viewer	2.9	2.91	5.81	2.91	
Live T.V. (on air)	4.0	2.26	6.26	3.13	
Live Radio (on air)	4.0	1.36	5.36	2.68	
Computer Assisted Instruction	1.7	1.88	3.58	1.76	
Print. 16 Pg. Booklet	3.7	2.93	6.63	3.32	3
Written Program Learning	3.8	3.29	7.09	3.55	1
Demonstration	3.7	2.88	6.58	3.29	4
Simulation	3.2	3.32	6.52	3.26	5
Oral Presentation	4.0	2.47	6.47	3.24	6

B.6

LIFE COMPETENCY: SURVIVING IN COLD WEATHER DURING AN EVACUATION

TARGET POPULATION: 100,000

FAMILIARIZATION LEVEL

Recommended instructional media systems ranked in order of appropriateness:

1. A self-instructional programmed learning booklet delivered by mail to
    the target audience.

2. An 18-minute slide/tape program delivered by the commercial broadcast
    systems.

3. An 18-minute videotape program delivered by the commercial broadcast
    systems.

4. A 16-page booklet delivered by mail to the target audience.

5. An 18-minute slide/tape program shown to small groups with a projector.

TABLE 18

FAMILIARIZATION COMPETENCY LEVEL

Media	Comb. Mean Score Pro and Dist.	Usability Feasibil. Score	Ranking		
			T	M	R
T.V. - Commercial	3.5	3.41	6.91	3.46	3
T.V. - Comm. w̄ Print.	2.3	3.73	6.03	3.02	
T.V. - Public	3.5	3.13	6.63	3.32	
T.V. - Cable	3.4	3.13	6.53	3.27	
3/4 cass. - Sm. Grps.	2.6	3.13	5.73	2.87	
3/4 cass. - Print.	2.0	3.59	5.59	2.80	
3/4 cass. - Facil.	1.7	2.95	4.65	2.33	
3/4 cass. - w̄ Facil. w̄ Print.	1.3	3.41	4.71	2.36	
3/4 cass. - On Indiv. Mach.	2.1	3.41	5.51	2.76	
Theater	2.8	3.25	6.05	3.03	
Mot. Pic. - T.V.	3.3	3.26	6.56	3.28	
Mot. Pic. - Sm. Grp.	2.7	3.25	5.59	2.98	
Mot. Pic. - Sm. Grp. Print.	2.1	3.72	5.82	2.91	
Mot. Pic. - Facil.	2.0	3.07	5.07	2.54	
Mot. Pic. - w̄ Fac. w̄ Print.	1.6	3.44	5.04	2.52	
Mot. Pic. - Indiv. Mach.	1.9	3.54	5.44	2.72	
Slide Tape - Sm. Grp.	3.6	3.24	6.84	3.42	5
Slide Tape - T.V.	4.1	3.08	7.18	3.59	2
Slide-Tape - Sm. Grp. w̄ Print.	2.7	3.52	6.22	3.11	
Slide-Tape - Sm. Grp. w̄ Facil.	2.5	2.88	5.38	2.69	
Slide-Tape - w̄ Print. w̄ Facil.	2.1	3.19	5.29	2.65	
Slide-Tape - w̄ Indiv. Viewer	2.9	3.46	6.36	3.18	
Live T.V. (on air)	4.0	2.30	6.30	3.15	
Live Radio (on air)	4.0	1.61	5.61	2.81	
Computer Assisted Instruction	1.7	1.84	3.54	1.77	
Print. 16 Pg. Booklet	3.7	3.18	6.88	3.44	4
Written Program Learning	3.8	3.79	7.59	3.80	1
Demonstration	3.7	2.21	5.91	2.96	
Simulation	3.2	2.64	5.84	2.92	
Oral Presentation	4.0	2.27	6.27	3.14	

LIFE COMPETENCY: SURVIVING COLD WEATHER DURING AN EVACUATION

TARGET POPULATION: 100,000

HIGH PROFICIENCY LEVEL

Recommended instructional media systems ranked in order of appropriateness:

1.   A self-instructional programmed learning booklet delivered by mail to
     the target population.

2.   A 16-page booklet delivered by mail to the target audience.

3.   An oral presentation to small groups.

4.   A live demonstration delivery in person to small groups.

5.   An 18-minute slide/tape program delivered by commercial television.

TABLE 19

HIGH PROFICIENCY COMPETENCY LEVEL

Media	Comb. Mean Score Pro and Dist.	Usability Feasibili. Score	Ranking		
			T	M	R
T.V. - Commercial	3.5	2.75	6.25	3.13	6
T.V. - Comm. w̄ Print.	2.3	2.88	5.18	2.59	
T.V. - Public	3.5	2.59	6.09	3.05	
T.V. - Cable	3.4	2.50	5.90	2.95	
3/4 cass. - Sm. Grps.	2.6	2.84	5.44	2.72	
3/4 cass. - Print.	2.0	2.96	4.96	2.48	
3/4 cass. - Facil.	1.7	3.21	4.91	2.46	
3/4 cass. - w̄ Facil. w̄ Print.	1.3	3.28	4.58	2.29	
3/4 cass. - On Indiv. Mach.	2.1	3.25	5.35	2.68	
Theater	2.8	2.00	4.8	2.4	
Mot. Pic. - T.V.	3.3	2.79	6.09	3.05	
Mot. Pic. - Sm. Grp.	2.7	2.84	5.54	2.77	
Mot. Pic. - Sm. Grp. Print	2.1	3.34	5.44	2.72	
Mot. Pic. - Facil.	2.0	3.46	5.46	2.73	
Mot. Pic. w̄ Fac. w̄ Print.	1.6	3.63	5.23	2.62	
Mot. Pic. - Indiv. Mach.	1.9	3.33	5.23	2.62	
Slide Tape - Sm. Grp.	3.6	2.34	5.94	2.97	
Slide Tape - T.V.	4.1	2.34	6.44	3.22	5
Slide-Tape - Sm. Grp. w̄ Print.	2.7	2.71	5.41	2.71	
Slide-Tape - Sm. Grp. w̄ Facil.	2.5	3.38	5.88	2.94	
Slide-Tape - w̄ Print. w̄ Facil.	2.1	3.38	5.48	2.74	
Slide-Tape - w̄ Indiv. Viewer	2.9	2.83	5.73	2.87	
Live T.V. (on air)	4.0	2.25	6.25	3.13	6
Live Radio (on air)	4.0	1.92	5.92	2.96	
Computer Assisted Instruction	1.7	2.75	4.45	2.23	
Print. 16 Pg. Booklet	3.7	3.65	7.35	3.68	2
Written Program Learning	3.8	3.46	7.46	3.73	1
Demonstration	3.7	2.96	6.66	3.33	4
Simulation	3.2	3.63	6.83	2.42	
Oral Presentation	4.0	3.17	7.17	3.59	3

TABLE 20

COMBINED FEASIBILITY SCORES

Media	Product Feasibility	Distrib. Feasibility	Ranking		
			T	M	R
T.V. - Commercial	2.6	4.4	7.0	3.5	
T.V. - Comm. $\overline{w}$ Print.	1.8	2.8	4.6	2.3	
T.V. - Public	2.6	4.4	7.0	3.5	
T.V. - Cable	2.6	4.2	6.8	3.4	
3/4 cass. - Sm. Grps.	2.6	2.6	5.2	2.6	
3/4 cass. - Print.	1.8	2.2	4.0	2.0	
3/4 cass. - Facil.	1.8	1.6	3.4	1.7	
3/4 cass. - $\overline{w}$ Facil. $\overline{w}$ Print.	1.2	1.4	2.6	1.3	
3/4 cass. - On Indiv. Mach.	2.6	1.6	4.2	2.1	
Theater	2.2	3.4	5.6	2.8	
Mot. Pic. - T.V.	2.2	4.4	6.6	3.3	
Mot. Pic. - Sm. Grp.	2.2	3.2	5.4	2.7	
Mot. Pic. - Sm. Grp. Print.	1.4	2.8	4.2	2.1	
Mot. Pic. - Facil.	1.4	2.6	4.0	2.0	
Mot. Pic. - $\overline{w}$ Fac. $\overline{w}$ Print.	1.2	2.0	3.2	1.6	
Mot. Pic. - Indiv. Mach.	2.2	1.6	3.8	1.9	
Slide Tape - Sm. Grp.	3.8	4.4	8.2	4.1	
Slide Tape - T.V.	3.8	4.4	8.2	4.1	
Slide-Tape - Sm. Grp. $\overline{w}$ Print.	2.6	2.8	5.4	2.7	
Slide-Tape - Sm. Grp. $\overline{w}$ Facil.	2.4	2.6	5.0	2.5	
Slide-Tape - $\overline{w}$ Print. $\overline{w}$ Facil.	2.0	2.2	4.2	2.1	
Slide-Tape - $\overline{w}$ Indiv. Viewer	3.8	2.0	5.8	2.9	
Live T.V. (on air)	3.8	4.2	8.0	4.0	
Live Radio (on air)	3.8	5.0	8.0	4.0	
Computer Assisted Instruction	2.0	1.4	3.4	1.7	
Print. 16 Pg. Booklet	3.8	3.6	7.4	3.7	
Written Program Learning	3.8	3.8	7.6	3.8	
Demonstration	4.6	2.8	7.4	3.7	
Simulation	3.8	2.6	6.4	3.2	
Oral Presentation	4.8	3.2	8.0	4.0	

SAMPLE 1

Sample Video Costs for 18-Minute Production
Based on Prevailing Rates

Pre-Production   5-10 days

Research		$2,600
Script		3,000
Production Coordination		2,000

Production   4 days

Producer	(250)	1,000
Director	(250)	1,000
Cameraperson I	(200)	800
Cameraperson II	(200)	800
Technician I	(100)	400
Technician II	(100)	400
Switcher	(150)	600
Soundman	(150)	600
Continuity	(50)	200
Studio	(500 per day)	2,000

Post-Production   4 days

Producer	(250)	1,000	
Director	(250)	1,000	
Switcher	(150)	600	
Editing equipment	(500 per day)	2,000	
Tape stock		400	
Music		800	
Mix		1,000	
Title/artwork		800	$23,000

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Sample Film Costs--18-Minute Film

Pre-Production	5-10 days		
Research		$2,000	
Script		3,000	
Production Coordination		2,000	
Production	10 days		
Producer	(250)	2,500	
Director	(250)	2,500	
Cameraperson	(200)	2,000	
Soundman	(200)	2,000	
Art Cameraperson	(100)	1,000	
Continuity Person	(50)	500	
Film		800	
Lighting		500	
Other equipment		600	
Per diem	($20 @ 10 days)	1,000	
Post-Production	10 days		
Producer		2,500	
Editor		2,000	
Equipment		500	
Processing		2,000	
Mix		400	
Music		400	
Titles		300	$28,000

SAMPLE 3

Sample Slide-Tape Costs for 18-Minute
Show Based on Prevailing Rates

Pre-Production   3-4 days

      Research $ 500

      Writing   600

      Production Coordination   300

Production   5 days

Producer/Director	(200)	1,000
Cameraperson	(100)	500
Assistant	(100)	500
Lights	(50)	250
Film		150
Per Diem	($20 @ 5 days)	300

Post-Production   4 days

Producer/Director	(200)	800
Processing		150
Sound Recording, Mix		200
Talent on mix		180
Duplicate set of slides		60
Music		150
Switcher		180
Pulsing Tape		60
Artwork, Titles		100

$6,000

Developing a Case for and an Initial Image of a Societal
Level Definition and Organization of Education

The case is developed by (1) examining a problem area and in that area identifying a predicament that has motivated and invited the search for a solution; (2) introducing a perspective that we have chosen as a way of looking at the predicament and proposing the idea of a societal level organization of education.

I. THE PREDICAMENT: A THREE-PRONGED CHALLENGE

There is today a universal thrust toward the improvement of the human condition. Much of that thrust is expressed as the desire for a higher quality of life. The idea that education will have to assume increasingly more responsibility in that quest is almost universally accepted by those who understand that only through increasing our conceptual, technical, and human competence can we cope with the dynamic changes that continue to take place in science, technology, and communications; in our social, economic, and political organizations and arrangements; and in the worlds of work and leisure. At a more general level, the attainment of a greater degree of human competence constitutes a challenge of the first order to education and requires the availability of educational experiences that are of a higher quality than those that presently exist. As we review recent information about the present state of education, we become more concerned about our ability to meet this challenge. A five-year study by a "blue ribbon panel" concluded that current educational practices are "still pretty much grounded in the perceptions of the nineteenth century. While they have almost achieved

the Herculean task of providing universal education for all adolescents, the schools at the same time became isolated, too large, weak in teaching citizenship and values, and reduced to acting as 'baby-sitters' for the nation's young adults."*

Another challenge emerged as we understood that if education is to improve the quality of life and the human condition, it has to become a life-long and continuous venture. It thus becomes a way of life rather than a quest for a livelihood. Through life-long learning, we can strive to become a fully functioning person but cannot ever reach the limits of our human potential.

There is also a third challenge. There is a large domain in education that we might call quality-of-life education. We associate quality-of-life education with a renewed emphasis on moral and aesthetic education and the development of human competence in cooperative interaction with others. The quality-of-life education domain also includes such emerging fields as career education, education for environmental awareness and ethics, and education for generating public and private decision-making and problem solving competence relevant to energy use and conservation.

The three-pronged challenge--(1) improving the quality of education, (2) providing life-long learning experiences, and (3) addressing the quality of life domain--creates a demand on formal education or schooling that is probably impossible to meet under the existing conditions prevalent in education today. This is particularly so because an increase in demands of schooling is not matched by an increase of available resources. In fact, it

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* The Education of Adolescents, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

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seems that rather than increasing in terms of the interaction factor, the financial resources that are made available to schools are often decreasing. The three-pronged situation briefly characterized above is the major source of dilemma. Our schools are simply asked to do more with less.

II. THE PERSPECTIVE AND THE IMAGE

A problem or predicament may be addressed from many different perspectives. The direction of the solution—and often the possibility of coming up with a solution—depends upon the view that one takes of the problem.

For example, one possible perspective might be a strictly economic one. This view might require assuming that a sizable increase in the financial support given to schools will adequately address the problem and resolve the current predicament. Such a perspective might be supported by the notion that the attainment of quality education is important enough to warrant significantly more investment in education.

During recent years, various perspectives have been articulated, including the delimitation of the school program in terms of "basics only," alternative models for schools, the "de-schooling" of the society, etc. Our perspective, however, is a systemic* or holistic one: (1) its scope encompasses a macro-system view of education; (2) its quest is for identifying components of the macro-system and their systemic relationships; and (3) it has an orientation toward clarifying the central or key entity around which the macro-system of education is to be organized.

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*It incorporates the economic perspective as well as other viewpoints.

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Education is more than schooling. The development of children and youth and the continuing development of adults intricately mesh with learning opportunities available in all facets of life. Beyond the boundaries of the school, formal and informal learning opportunities are offered in diverse ways: in the home; through the various media; in peer, neighborhood, civic and religious groups; through community, youth, and adult agencies; through private and public employers; and in many every-day life situations. For too long these educational efforts have been fragmented and separated from the school and from each other, even though ample evidence suggests that linkage and integration of like efforts may generate benefits well beyond that which the total sum of separate efforts might produce.

A powerful potential resides in the notion of an alliance of all societal sectors that are interested in and involved in education. Such an alliance, if formally constituted, could identify, integrate, and energize those forces and components of the society that jointly possess a vast reservoir of educational resources and opportunities and can facilitate the full development of the individual. Thus, our first perspective on the problem leads us to explore the creation of a macro-societal system of education in which educational resources, functions, and components would be shared among those sectors of the society that have the interest and capability to make educational contributions. In short, we would identify and integrate by design all educational opportunities and resources that are available in the society.

We define education as that domain of human activity that comprises all those arrangements, resources, situations, and opportunities that facilitate learning and development in children and youth, and continuing learning and development in the adult population.

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In the past, whenever we looked at education in the broader sense suggested in the paragraph above, this approach would usually result in the conclusion that school should be extended in two possible ways. A more modest form of extension was to relate the subject matter presented in school to real life, thereby allowing students to make occasional excursions beyond the walls of the school, or bringing into the school representatives or representations of the outside world. A more dynamic interaction with the outside has emerged more recently through career education. This movement has gone a long way toward opening up the outside world as a learning territory and involving the private and public sector in the business of the school. However, we attempt here to define education even more broadly than it is conceptualized in the approaches described above. The macro-system that we envision has the capacity to integrate all forces and entities that can facilitate learning-- including the school.

The entity or system that is at the center of the macro-system is the individual learner. Around the learner are systems that have the potential to make contributions to or facilitate the development of the individual. The system that is closest to the individual is informal in nature. It comprises the family, peers, friends, and generally those with whom the individual is in frequent and close contact. We call this system the Primary Social System; it has much to contribute to learning in an informal mode.

Formalized education--the various schools that are accessible to members of the society--constitute another system. In this system we would include all those societal organizations whose primary function is instruction. We call this Formal Educational Systems (Schools).

The third domain consists of a variety of educational agencies: youth organizations; the church; community education, civic, recreational, and

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cultural groups, etc. These agencies offer a wide scope of educational resources. We call them Community Educational Agencies.

A fourth domain is a complex realm of many components that are sources of information and knowledge, expressions of the human experience, and are currently or may become learning resources. Examples of these components might be the press, TV and radio broadcasting, the many forms of art, cultural displays, libraries, etc. In a broad sense, all these aim to communicate something that might constitute viable resources and opportunities for learning. Thus, we call these components Communication Systems.

Another area of the human experience that has been a rich source of education is the Work System of the public and private employment sectors.

The systems mentioned above offer educational resources by the very nature of their purpose and existence. Beyond these there is still a large domain that includes life situations, events, and social groups that might offer educational resources in an ad-hoc way or as a secondary function. We call these Ad-Hoc Learning Systems.

Figure 13, which follows, displays a map of the systems that might comprise an educational macro-system.

In developing the notion of the systems complex of the macro-system we took the position earlier that the learner is the key or central entity of the system. Accordingly, the system should be conceptualized, designed, and organized so that the learner will have easy and ready access to the educational resources and functions and the learning opportunities and situations that are potentially available in the various systems that comprise the macro-system. The main thrust in designing education at the societal (macro) level, therefore, will be the identification of functions and the functions-based creation of relationships (or structure) among the various component systems.

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These systems can be placed in a directly cooperative and coordinated relationship so that they can respond to the learner's needs in the most effective and efficient way.

FIGURE 13

An Expanded Systems Space of Education

Ad-Hoc

Learning Resources

Systems

The Primary Social System

Formal Educational and Training Systems

The Individual

Community Educational Agencies

Communication Systems

The Work System
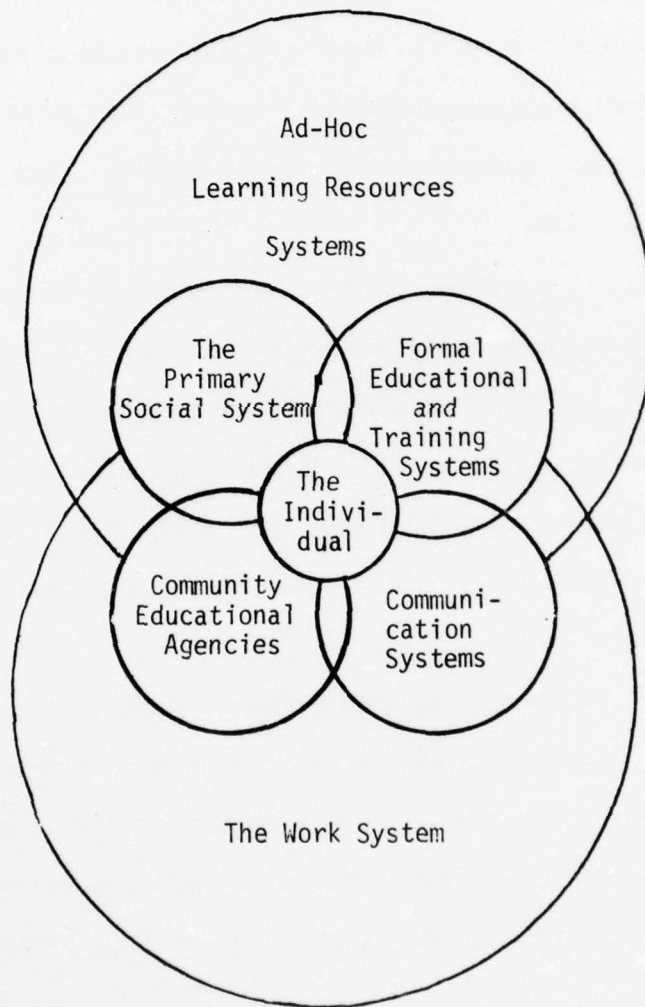
The perspective that we have taken in looking at the predicament has led us to generate the proposition that a societal-level organization of education, which can be accomplished through linkage and formalized interorganizational arrangements for cooperative and coordinated sharing of resources and functions among the various educational sectors of the society, will result in a manifold increase of educational potential.* Such potential will match the demand for quality education and quality-of-life education.

The outstanding issue—for which we cannot yet offer an experience base in education, nor even a knowledge base—is the consideration of how to link up the various educational sectors of the society in a formalized cooperative/ coordinated arrangement so that education can then be defined and organized at a macro or societal level.

Another perspective we have taken in our examination originates from a systems-theory-based examination of education. Such an examination shows that education is a complex social system operating at various systems levels. Systems inquiry insists upon: (1) the specification of these levels, (2) the identification of one of these levels as the primary level, and (3) the definition of the key entities that are central to the systems operating at the various levels.

Traditionally, education has been defined at two levels: the institutional level and the instructional level. The systems operating at the institutional level is the school: the formalized societal arrangement of education. Educational goals and resources by which to implement goals are defined and managed at this level. Subordinate to this level is the

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* Recently, attempts have been made to link some of the educational sectors described above for educational purposes, such as vocational and career education. These efforts lack an explicit theory base and have not lead to a societal level organization of education.

instructional level. At this level, teachers act as the key entities and operate the classroom based system of instruction for the attainment of goals established at the institutional level. The kind of education scheme described above appeared to be appropriate for mass (compulsory) education, matching the assembly line and "melting pot" orientation of our early twentieth century industrial society.

The post-World War II emergence of the technological society, with its explosion of information and knowledge, has caused the development of variations in the classroom-based structure of the systems complex described above. New curriculum representations have emerged, coupled with instructional systems technology and media-oriented methodology, with some attention given to individual differences. Recently, however, the instituted variations appear to experience increasingly more difficulty as we (1) accept cultural pluralism as a viable societal arrangement, (2) experience diversification of life-styles, and (3) make a thrust for the increase of quality of life and the improvement of the human condition.

In the emerging new era an emphasis is placed on the unique fulfillment and development of the individual through life-long learning, and on the development of cooperative interaction skills and quality-of-life education in addition to the development of cognitive and occupational competence. Accordingly, in the emerging educational systems complex of this new era, the learning experience level is the primary level and the learner becomes the key entity around which to build the educational system. This emerging image of education leads us back to the earlier articulated need for a societal level organization of education. Namely, the very moment we take seriously the proposition that the learning experience level is primary and the learner is the key entity, we have to recognize that we need to find ways to design and

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implement as many learning systems as we have learners. Consequently, we are
faced with requirements for a vastly larger set of educational (instructional
and learning) resources, situations, arrangements, and opportunities than are
now available in the schools. To institutionalize such a vast expansion in
the existing organizational framework of the school would require a financial
investment that appears to be beyond the means of our society which--in
addition to education--has to invest its tax dollars in such other priority
domains as national security, health and social services, energy development,
etc. Thus, it seems that concurrent with the establishment and organization
of the learning experience level, the notion of a societal level organization
of education should be entertained.* We should seek out and activate all
educational resources, situations, and arrangements that might be available to
facilitate learning and coordinate the use of those resources through
a societal level organization of a macro educational system.

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* The table on the next page displays an image of a systems complex of educa-
  tion organized at four levels.

TABLE 1

An Image of the Systems Complex of Education

A brief characterization of the four levels
at which educational systems would operate:

● The Societal Level, at which a Macro System of education
  is proposed which would link up the various sectors of
  the society through coordinated and cooperative arrange-
  ments for the sharing of their educational resources.

● The Institutional Level, at which the various formal and
  informal educational and other societal systems operate
  that have educational resources. These systems would be
  coordinated at the macro systems level for the sharing of
  and thus more effective use of their educational
  resources. These systems provide the policies, plans,
  structure, and arrangements required to administer and
  account for the use of educational resources at the
  instructional and learning experience levels.

● The Instructional Level, at which we plan, design, and
  develop instructional/learning arrangements, and make
  plans for the use of resources that would facilitate the
  learning and the development of the individual.

● The Learning Experience Level, which is the primary level
  of the systems complex, at which learner systems operate.
  These constitute the nucleus of the systems complex.
  Around the learner system are built the instructional
  systems, supported by the various educational sectors of
  the society that have the capability and resources to
  facilitate learning and that link up with each other to
  enhance the education of the individual and the society.

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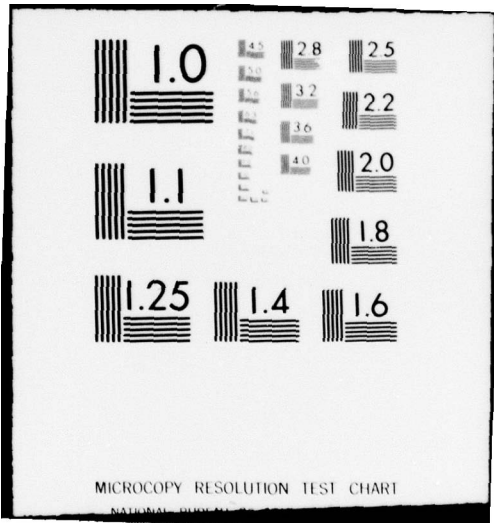
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A CONCEPT AND FEASIBILITY ANALYSIS OF A CITIZEN CIVIL PREPAREDNESS EDUCATIONAL PROGRAM

Unclassified

Far West Laboratory for Educational Research and Development
178 pages, DCPA 01-76-C-0328, Work Unit 4422A

This study is concerned with the analysis of the concept of a civil preparedness public education program and an analysis of the feasibility of designing and developing such a program.
Carrying out these analyses required the following steps.
- Defining public education as well as its functions during peacetime, crisis-expectancy and crisis-activated time periods.
- Describing its function as part of the civil preparedness effort.
- Designing a procedure to develop a public education program.
- Conceptually deriving and organizing those behaviors which need to be produced by a public education program at specific times for specific target groups.
- Developing the basis for the curriculum necessary for such a program.
- Analyzing the means to instructionally implement the future curriculum by balancing the effectiveness of that means against its cost.
- Examining the system by which a public education program could be infused into the organizations and institutions closest to the lived world of the target group.
- Describing those organizations and institutions to determine the feasibility of delivering a civil preparedness public education program.

The results of these procedures is a sound basis for the development of educational resources and the curriculum materials constitutive of public education programs. Moreover, the cost benefit analysis provides specific and immediately useful ways to put the program in a form available for target group use. The organizations and institutions which make up the target group's diversity were analyzed. The most feasible institutions for delivering a public education program were those having a strong corporate identity and which were national in scope. However, a variety of means (primarily variations on the multiplier effect) to deliver programs to smaller, less organized institutions were also examined.