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ABSTRACT

The study aimed at constructing, validating, and testing two instruments, one of which measured attitude change toward Civil Defense adult education, and one which measured level of knowledge about Civil Defense practices; and evaluating the effectiveness of the Personal and Family Survival (PFS) Course in terms of attitude change and knowledge gained on the part of selected participants. Data were collected from 52 senior nurses from Evansville, Indiana, and 43 from Indianapolis. All participants were administered the Civil Defense Adult Education Attitude Scale and the Civil Defense Knowledge Scale as a pre-test and post-test of attitudes and knowledge under investigation. The experimental group comprised the Evansville students who received the 12 hour PFS. They had never participated in a Civil Defense course. Both scales were content validated through expert opinion, and construct validated empirically by using known populations. In addition, a measure of reliability was established for each scale. Differences in pre-test data were also compiled, tested, and evaluated. Prior to the treatment, both groups exhibited a favorable attitude toward Civil Defense adult education. Thus it appears that among the student nurses of this study, the PFS course was not necessary to bring about favorable changes. (author/nl)

CIVIL DEFENSE: AN ANALYSIS OF ATTITUDES AND KNOWLEDGE

BY

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Submitted in partial fulfillment of the requirements
for the Master of Science degree
in the School of Education
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Director of Thesis

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This study marks the final cornerstone of nearly three years of part-time study in the field of Adult Education. It is impossible to thank one individual so therefore, the author wishes to acknowledge his indebtedness to the entire faculty of the Bureau of Studies in Adult Education. During the previously stated time span the author has had the privilege of close professional association with all of the faculty, and was rewarded with special insight into some of the problems of adult learning.

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Civil Defense Police Auxiliary, Bloomington, Indiana
Deaconess School of Nursing, Evansville, Indiana
St. Vincent's School of Nursing, Indianapolis, Indiana

To my wife Margaret, without whom it would have been impossible—deepest thanks.

G.F.M.

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CHAPTER I

INTRODUCTION

Background of the Problem

In an age in which the threat of thermonuclear war has relegated to obsolescence the concept of only military forces suffering the casualties of a war, we as American citizens, regardless of how distasteful it may seem, must consider the possibility that the United States may become a gigantic battlefield.

Protection of the population from the ravages of a nuclear war is one of the concerns of the Civil Defense program. Under federal law, Civil Defense is the joint responsibility of federal, state, and local governments.[1] Figure 1, page 2, depicts, in part, the relationship between the three levels of responsibility.

As portrayed in Figure 1, the responsibility for Civil Defense at Cabinet level lies with the Department of Defense, and more specifically, the Secretary of Defense. This responsibility is delegated to the Secretary of the Army who, in turn, directs the efforts of a civilian Director of Civil Defense. The Director of Civil Defense, in addition to being responsible for the complete national Civil Defense program, controls the efforts of the regional directors. There are eight regions which comprise the entire territory of the United States.

The relationship between the regional directors and the state directors, which comprise the region, is one of program coordination,

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[1]Department of Defense, Office of Civil Defense, Civil Defense Management Textbook, pp. 1-2.

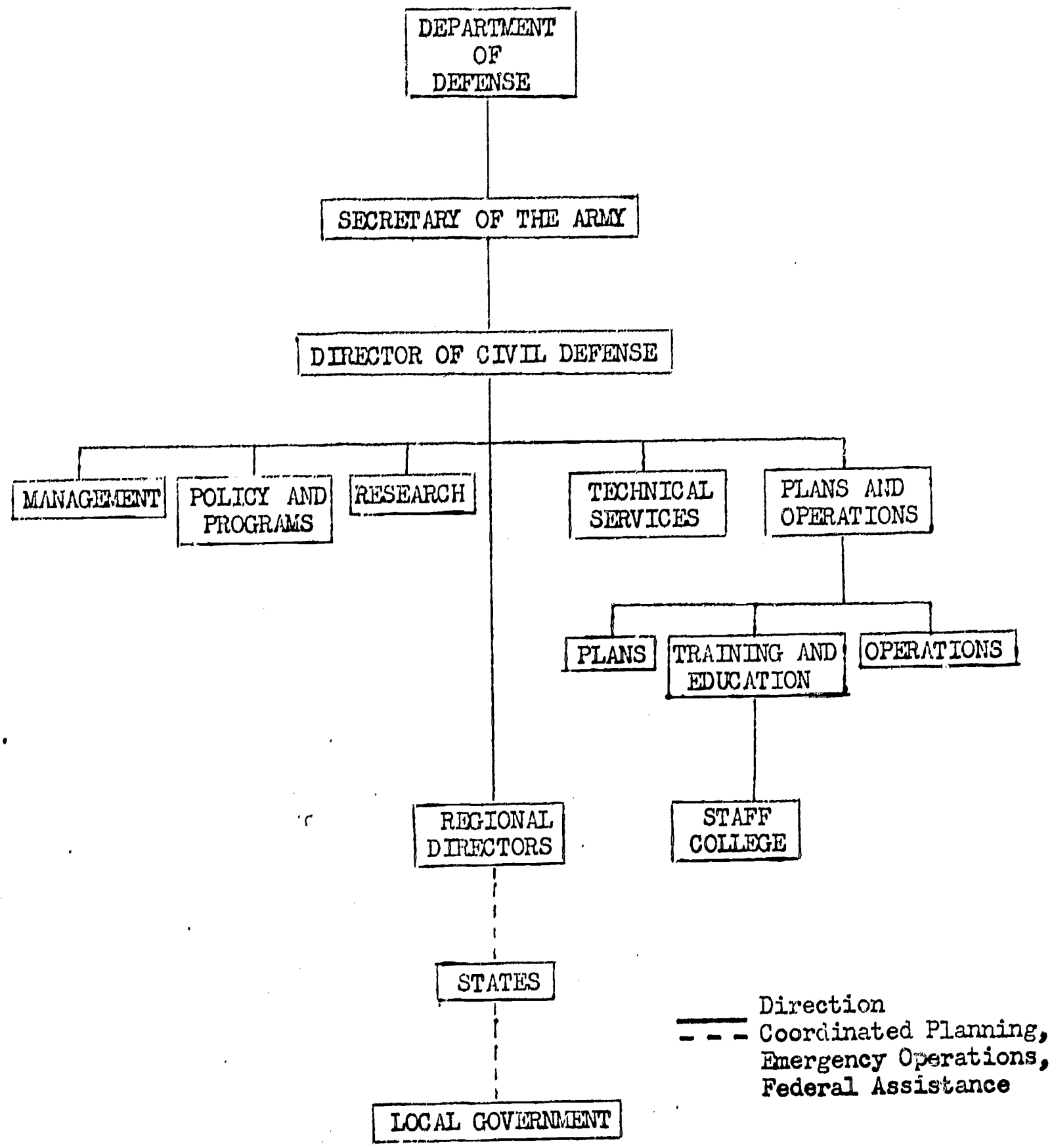

Figure 1. An Organizational Chart Portraying Civil Defense Relationships at Federal, State, and Local Levels

planning for contingency operations, and the administration and supervision of federal assistance funds.

The entire Civil Defense program encompasses a myriad of responsibilities and objectives which range from protecting life to planning for emergency repair of facilities and utilities in the event of any given emergency.

The investigator was interested in one given objective of the national Civil Defense program, i.e., Training and Education (Figure 1). The Training and Education facet of the Civil Defense program has three specific purposes:

> 1. The training of federal, state, and local government officials and selected military personnel in Civil Defense tasks.
> 2. The training of skilled Civil Defense workers in urban and rural areas.
> 3. The education of the public to be as self-sustaining as possible and to assist the community emergency capability.[2]

Thus, within the framework of Civil Defense adult education, there are three target groups which will logically require different educational programs.

In order to meet the objective of training federal, state, and local government officials in selected managerial tasks, the Civil Defense Staff College (Figure 1), was established at Battle Creek, Michigan. The courses offered at the college are designed to train selected individuals not only as state and local Civil Defense directors, but also to train individuals for executive responsibility in the Civil Defense program. Accordingly, the academic work is directed toward Civil Defense management and

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[2]Headquarters, Department of the Army, Department of the Army Field Manual 20-10, Military Support of Civil Defense, pp. 14-15.

Civil Defense planning and operation.

The training of skilled Civil Defense workers, both in urban and rural areas, and the education of the general public usually is accomplished at the state level. Figure 2 presents an organizational chart of the type of educational system for Civil Defense which is common for the majority of the states within the United States.

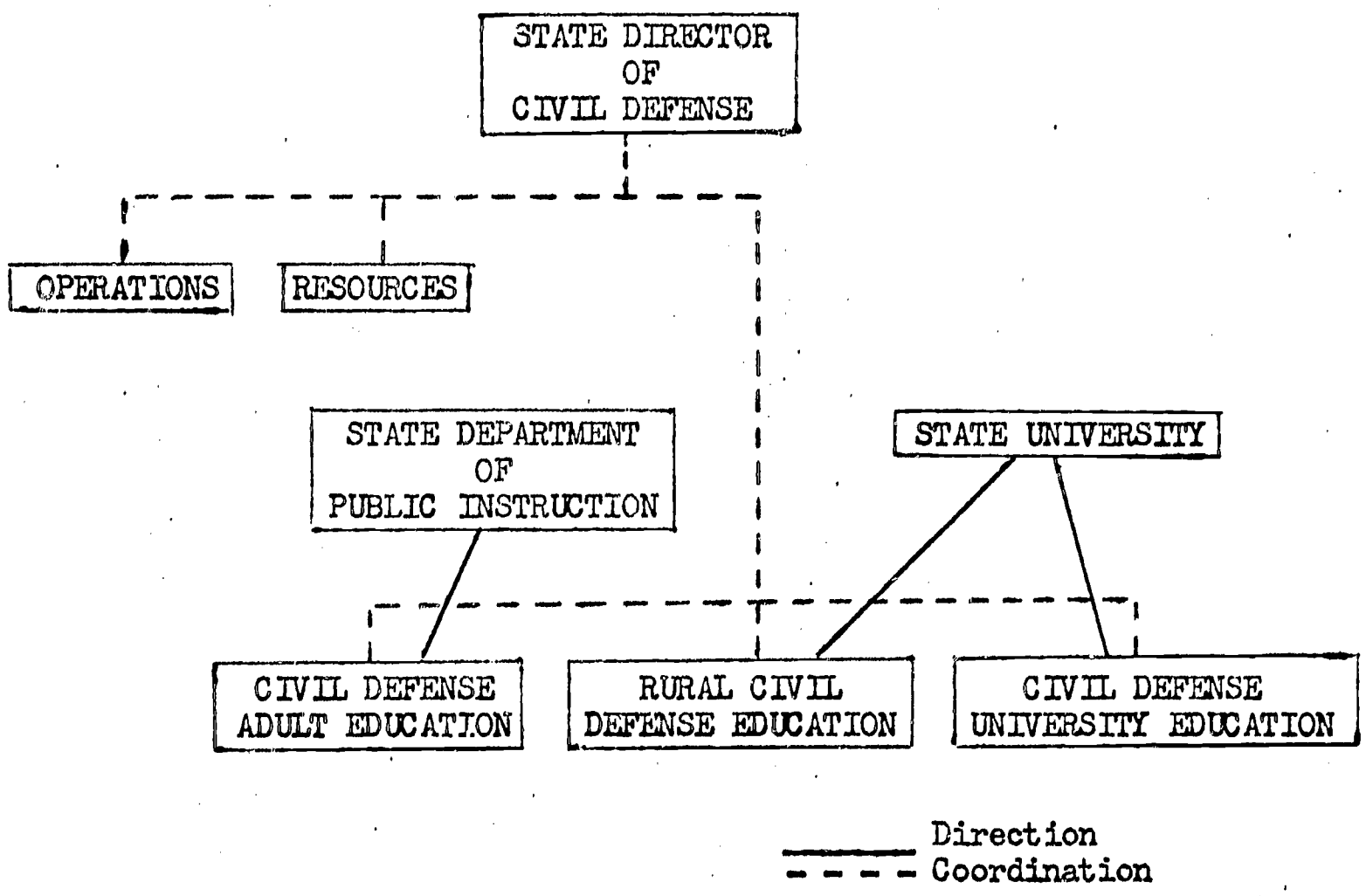

Figure 2. A Chart of a Usual Type of State Organization for Civil Defense Education

Considering only the State Civil Defense Director and his relationship to the educational system, it is noted that he functions primarily as a coordinator for the entire state Civil Defense educational effort. This is not to imply that he is not responsible for

establishing certain educational goals, but that significantly, he does not supervise the elements within the state which are directly responsible for administering the education programs.

The State Directors of the Rural Civil Defense Program and the Civil Defense University Extension Program are supervised by the state university. In the case of the state of Indiana, the rural program operates under the auspices of Purdue University, while the extension program is under the supervision of Indiana University. The director of the Civil Defense Adult Education Program is under the operational control of the State Department of Public Instruction.

The Civil Defense University Extension Program (CDEUP) performs two functions. First, it conducts conferences for business leaders, civic leaders, and public officials to acquaint them with basic Civil Defense measures. Secondly, CDEUP, in addition to other instruction, trains instructors who in turn will teach local Civil Defense personnel the fundamentals of radiological monitoring and shelter management. After these instructors are trained, the responsibility for their supervision is transferred to the director of Civil Defense Adult Education.

The Rural Civil Defense Education Program, as the name implies, is the apparatus which instructs and informs the rural population on measures of personal survival in the event of a nuclear war, and on measures which may be taken to protect livestock and foodstuffs from nuclear effects. The program normally operates through the State Cooperative Extension offices using the services of the county extension agents, home demonstrators, and 4-H leaders.

The Civil Defense Adult Education Program, (hereafter called CDAE), is concerned with two principal functions. First, the CDAE director is responsible for conducting a 16 hour Radiological Monitoring course which is structured to prepare selected individuals to act as radiological monitors either as part of a shelter management staff or as part of an emergency operating crew. Secondly, the director of CDAE is responsible for conducting a 12 hour Personal and Family Survival course and for training instructors to teach this course.

The Personal and Family Survival course is an adult education project which is designed to disseminate to the widest segment of the population information about the role of the individual and the family in Civil Defense activities involving nuclear war. It is designed to be conducted through normal adult educational channels in a state. The objectives of the program are as follows:

1. To make clear the reason for a Civil Defense Program by imparting the necessary background information about its origin and organization.

2. To alert class members of the dangers to the civilian population of modern methods of war.

3. To teach the individual the action he is responsible for taking, now and when disaster strikes, for individual family and community survival.[3]

For illustrative purposes, Table 1 lists the subject matter which is included in the course.

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[3]Hollis, J. C., "Civil Defense Adult Education Program," School Life 42:28-30, May, 1960.

TABLE 1. SUBJECTS TAUGHT IN PERSONAL AND FAMILY SURVIVAL COURSE*

1.	Modern Weapons and Radioactive Fallout (Effects)
2.	Modern Weapons and Radioactive Fallout (Protection)
3.	The National Civil Defense Program
4.	National Fallout Shelter Program (Community Shelters)
5.	National Fallout Shelter Program (Home Shelters)
6.	Local Civil Defense and Community Shelter Plans
7.	Survival on the Farm
8.	Individual and Family Preparedness for Shelter Living
9.	Emergence from Shelters

*Source of data: Teacher's Manual, Civil Defense Adult Education, U. S. Office of Education, Department of Health, Education, and Welfare.

A varying amount of time may be devoted to each subject. For example, if the class were composed of an urban group, a proportionately less amount of time could be devoted to that portion of the subject schedule which is devoted to Survival on the Farm.

The course is designed to employ a maximum amount of training aids. For example, in a given course there are approximately 150 thirty five millimeter slides and five 16 millimeter films. In addition, instructors are encouraged to make maximum use of local Civil Defense officials as resource personnel.

During the fiscal year of 1967, in the state of Indiana, there were a total of 104 instructors trained to teach the Personal and Family Survival course. In addition, there were 416 of these courses conducted with a total of 10,179 participating adults who

completed the course of instruction.[4]

A cumulative total of 38,498 adults have completed the course since the inception of the program.[5] Thus, from the standpoint of public adult education, the Personal and Family Survival course has been widely disseminated within the state of Indiana.

Table 2 depicts the cost of the CDAE program as computed on an individual student basis. The yearly figures represent the average cost of training a student in either the Personal and Family Survival course or the Radiological Monitoring course.

TABLE 2. COST PER STUDENT OF CDAE PROGRAMS*

Year	Cost
1963	$12.12
1964	$ 7.85
1965	$ 9.27
1966	$ 6.30
1967	$ 8.96

*Source of data: Records from Office of Director, CDAE, State of Indiana.

The problem for this investigation will be to analyze the value of the Personal and Family Survival course as a design for influencing positive attitude changes toward the felt need for Civil Defense adult education. In addition, the investigation will attempt to measure the amount of knowledge gained by a selected group as a result

[4]Department of Defense, Office of Civil Defense, Annual Statistical Report FY 1967, p. 101.

[5]Ibid. , p. 101.

of participating in the course.

Need for the Study

According to Mr. Richard Pea, State Director of Indiana for CDAE, the Personal and Family Survival course (hereafter called PFS course) will be curtailed starting approximately 1 January 1969. As in other Civil Defense educational courses, the fund allocation is provided by the United States Office of Civil Defense through the United States Office of Education. Because of a lack of funds during the fiscal year of 1968, there will be a loss of CDAE staff members. Since these staff members, together with Mr. Pea, are responsible not only for conducting a portion of these PFS courses, but also for training instructors who can teach the course, the program will, of necessity, be curtailed.

Materials, which are presented free to the students, the use of a variety of training aids, plus the payment of $72.00 per course to trained instructors other than CDAE staff, all constitute additional costs of the program.

Accordingly, it would appear logical to examine this given Adult Education program from the standpoint of:

1. The expressed felt need for a program of Civil Defense adult education.

2. The effectiveness of the course in changing attitudes toward Civil Defense adult education.

3. The effectiveness of the course in raising the knowledge level of a given group of participants.

The results of comparing these factors with the cost of the program, in terms of students trained, might provide the basis for reassessment of the decision to curtail the course.

Statement of the Problem

The problem proposed for this study was two-fold:

1. To construct, validate, and test two instruments, one of which would measure attitude change toward Civil Defense adult education, and one of which would measure level of knowledge about Civil Defense.

2. To evaluate the effectiveness of the PFS adult education course in terms of attitude change and knowledge gained on the part of selected participants.

The following hypotheses were tested:

1. There is a significant difference of attitude toward the felt need for adult education programs on Civil Defense between student nurses who participate in the PFS course and those who do not participate in this training program.

2. There is a significant difference in the knowledge of Civil Defense measures with respect to nuclear effects between student nurses who participate in the PFS course and those who do not participate in this training program.

In order to determine the direction and extent of any change resulting from the experiment, answers to the following questions were sought:

1. To what extent, if any, was the attitude of the experimental subjects toward Civil Defense adult education changed as a

result of participation in the PFS course?

2. To what extent, if any, was there a change in the knowledge of Civil Defense on the part of the experimental subjects as a result of participation in the PFS course?

3. Were there any facets of knowledge or attitude about Civil Defense which were common to both participants and non-participants in the PFS course?

Definition of Terms

Attitude. For purposes of this study, attitudes were defined as verbal responses which indicate acceptance or rejection, approval or disapproval, of a given concept or course of action.

Adult Education. In this study, adult education was defined as:

1. The process by which adults have and use opportunities to learn systematically under the guidance of an agency, a teacher, or a leader.[6]

2. "...any kind of learning that alters the way we think about something, changes the way we behave, or adds to our supply of information and knowledge..."[7]

Civil Defense. In this study, Civil Defense was defined as activities or measures designed to minimize the effects of a nuclear war on a population.

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[6]Bergevin, P.; Morris, D.; Smith, R. M., Adult Education Procedures, p. 240.

[7]Bergevin, P., A Philosophy for Adult Education, p. 51.

Assumptions

This study was formulated on the following assumption:

1. That it is possible to quantitatively measure attitude change and knowledge level through the use of appropriate measuring instruments.

Limitations of the Study

This study was limited, with respect to participants, to senior student nurses who were in their final year of study at two selected schools of nursing. It was not intended that the results of the experiment would apply to any other group, but that from the results, certain inferences could be drawn which might be applicable to other groups.

Although the instruments were judged valid by a group of experts, and were validated empirically using known populations, the perfection of construction of the instruments was not claimed.

Because of the homogeneity of the sample, no attempt was made to screen the sample according to such criteria as socio-economic level, age, or intelligence. The only adherence to a criterion was that all participants must not have participated in a Civil Defense adult education program prior to the experiment.

Significance of the Study

Related research in Chapter II indicates:

1. That a large percentage of the sampled population have indicated they would voluntarily participate in a Civil Defense program.

2. That there is a widespread and unrealistic fear of the effects of a nuclear war.

The findings of the study reveal that the PFS course provides a possible approach for voluntary public participation. In addition, the findings verify that enrolling in the PFS course is one method that participants can use to dispel faulty ideas about the effects of a nuclear war.

It was planned to submit this study for consideration through Civil Defense government channels, and in so doing, it was hoped that the results might justify a reconsideration on the decision to curtail the course in the state of Indiana.

Finally, it was hoped that from the results an inference could be drawn that an informed population is a secure population, and hence, a more stable population during periods of national crisis.

CHAPTER II

REVIEW OF RELATED RESEARCH

Attitudes Toward the Possibility and Dangers of Nuclear War

Surveys from various sources have revealed that a significant amount of the sampled population have expressed fear of the possibility of a nuclear war. Shortly after the advent of nuclear warfare in 1945, the National Opinion Research Center (NORC) asked the following question:

> If there is another world war, about how much danger do you think there'll be of most city people on earth being killed by atomic bombs: a very real danger, only a slight danger, or no danger at all?[1]

Eighty three per cent of the sampled population saw a real danger in the possibility of nuclear destruction.

In 1953, the American Institute of Public Opinion (AIPO) posed the following question to a population sample: "If the United States should get into another world war, do you think the hydrogen bomb would be used against this country?"[2] Of the 80 per cent of the sample who were familiar with the H-bomb, 66 per cent thought it was likely that the weapon would be used against the United States.

Klonglan (1966), using data from survey field work conducted by the NORC, found that 45 per cent of 1,497 respondents questioned answered either "very likely" or "fairly likely" to the following

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[1]Erskine, H. G., "The Polls: Atomic Weapons and Nuclear Energy," Public Opinion Quarterly 27:156, Summer, 1963.

[2]Ibid. , p. 157.

question: "Right now, how likely do you think it is that we're in for another big World War — one where nuclear bombs would be used— very likely, fairly likely, fairly unlikely, or very unlikely?"[3]

Thus, it would seem that public concern toward the possibility of a nuclear conflict which would involve the civilian population of the United States has shown a consistent pattern of attitudes expressed by those who have been surveyed.

As a corollary to this information, an investigator would expect that most surveyed United States citizens would perceive in nuclear warfare an implied danger to their personal welfare. Accordingly, in March of 1963 in a poll conducted by AIPO, the following question was asked: "If we should happen to get into an all-out nuclear war, what do you think your own chances would be of living through it?"[4] Of the sampled population, 52 per cent felt that they would be in great danger while an additional 37 per cent experienced varying degrees of danger.

In a similar investigation, Nehnevajsa (1966) found in a survey that 67 per cent of the respondents believed that their chances for survival after a nuclear attack were either "50-50", "fairly bad", or "very bad", while only 25 per cent of the sample felt their chances were either "very good" or "fairly good".[5]

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[3]Klonglan, G. E.; Beal, G. M.; Bohlen, J. M., Factors Related to Adoption Progress, A 1966 National Study of Public Fallout Shelter Adoption, p. 148.

[4]Erskine, H. G., "The Polls: Atomic Weapons and Nuclear Energy," Public Opinion Quarterly 27:158, Summer, 1963.

[5]Nehnevajsa, J., Americans' Views on Civil Defense in the Cold War Context: 1966, p. 106.

Attitudes Toward Knowledge as a Means to Counter the Fear of a Nuclear War

An investigator might logically conclude that if the fear of the consequences of a nuclear war are prevalent among the population, people would turn toward the seeking of knowledge as a panacea for combating the threat. However, Kraus and others (1963) tested the effectiveness of mass media as a tool to disseminate knowledge about fallout. As part of the study, Kraus hypothesized that anxiety about the effect of nuclear fallout will decrease as knowledge about the subject increases.

However, the hypothesis was rejected as Kraus found a low association between anxiety level and knowledge about radioactive fallout. Accordingly, high and low anxiety scores were interspersed among high and low knowledge scores.[6] But it is significant to remember that in this case, the type of learning which was being evaluated as a catalyst for levels of anxiety was random experiential, and thus was not based on a systematic course of instruction as a means to reduce the anxiety level.

Berrien and others (1962) tested two groups on their level of knowledge about the effects of nuclear radiation. One group consisted of fallout-shelter owners and the other group consisted of non-owners. A logical assumption would be that the concerned citizens who have taken specific and positive action toward the possibility of nuclear war by constructing fallout-shelters, would be the better informed group. Surprisingly, there was little

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[6]Kraus, S.; Mehling, R.; El-Assal, E., "Mass Media and the Fallout Controversy," Public Opinion Quarterly 27:202, Summer, 1963.

significant difference between the knowledge level of both groups.[7] Table 3 shows the comparative level of knowledge between both groups tested.

TABLE 3. LEVEL OF KNOWLEDGE ABOUT NUCLEAR FALLOUT OF SHELTER OWNERS AND NON-SHELTER OWNERS*

Level of Knowledge	Non-Shelter Owners	Shelter Owners
Highly informed	14%]-34%	1%]-33%
Adequate, but not impressive	20%	32%
Minor errors	14%	21%

*Source of data: Table 2, "The Fallout-Shelter Owners," p. 207.

This study could infer that knowledge about nuclear effects is not correlated with protective measures taken by concerned citizens.

Public Attitude Toward Civil Defense

Since recent surveys indicate that people express anxiety towards the threat of nuclear war, and since this anxiety seems to have little motivational impetus, it might also be logical to conclude that the population is apathetic toward Civil Defense. However existing research does not support this theory.

Klonglan (1966) found that in a representative sample of 1,497 people, 67 per cent favored Civil Defense as a protective measure

[7]Berrien, F. K.; Schulman, C.; Amarel, M., "The Fallout-Shelter Owners: A Study of Attitude Formation," Public Opinion Quarterly 27:207, Summer, 1963.

against nuclear war. In addition, 87 per cent of the sample believed that adequate funds were important for the pursuit of the Civil Defense program.[8]

Nehnevajsa (1966) found in a survey that over 61 per cent of the respondents did not believe that a Civil Defense program would be too expensive.[9] An overwhelming 96 per cent disagreed with the statement: "There is no need for Civil Defense because nuclear war is impossible".[10]

Dr. Richard Willsey, Indiana state Rural Civil Defense Director, in an unpublished study involving Home Demonstration Clubs, found that 75 per cent of a sample of 356 women disagreed with the statement: "The Civil Defense program is a waste of time and money." Almost 70 per cent of the sample disagreed with the statement: "No Civil Defense program can be very effective".

Public Attitude Toward a Required Type of Civil Defense Program

While existing research tends to substantiate the probability that the public supports Civil Defense, it also infers that the public is not only misinformed about the effects of nuclear warfare, but is also unable to express the type of program they want. The pattern emerges as one wherein the public equates a Civil Defense program

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[8]Klonglan, G. E.; Beal, G. M.; Bohlen, J. M., Factors Related to Adoption Progress, A 1966 National Study of Public Fallout Shelter Adoption, p. 267.

[9]Nehnevajsa, J., Americans' Views on Civil Defense in the Cold War Context: 1966, p. 112.

[10]Ibid. , p. 113.

with the construction of fallout-shelters. The attitude can perhaps be explained as "We don't know what should be done, but something must be done".

Rosenstock and others (1963) made a survey of the reactions of a sample toward three health issues: The consumption of fatty foods, the use of pesticides, and the potential danger of radioactive fallout. He found that a substantial percentage of the involved personnel were taking action either physically or mentally towards the dangers of eating fatty foods or the indiscriminate use of pesticides. However, 90 per cent of the same group reported they were doing nothing about the potential threat of fallout.[11] Rosenstock inferred that educational programs involving more personal contact with the public might remedy this situation.

In conjunction with expressed attitudes toward a required or desirable type of Civil Defense program, it appears that the sampled population in the surveys have done very little to prepare themselves individually for a possible nuclear war.

In a poll conducted by AIPO (1960), 89 per cent of the respondents answered the following question in a negative manner: "Suppose you had the warning that enemy bombers and missles with nuclear weapons were heading toward many points in the United States—have you done anything to prepare for this kind of emergency?"[12]

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[11] Rosenstock, I. M., and others, "Public Knowledge Opinion and Action Concerning Three Public Health Issues: Radioactive Fallout, Insect and Plant Sprays, and Fatty Foods," Journal of Health and Human Behavior, 7:197, Summer, 1966.

[12] Erskine, H. G., "The Polls: Atomic Weapons and Nuclear Energy," Public Opinion Quarterly 27:160, Summer, 1963.

However, the same poll also indicated that 71 per cent of the respondents favored a law which would require each community to construct fallout-shelters.

Rose (1962) found that of a given sample almost every respondent read a daily newspaper and over 50 per cent of the respondents read one or more national magazines. Over 25 per cent of these respondents had never read anything about Civil Defense practices.[13] The great majority of these respondents who had read about Civil Defense listed their source of information as government publications.

In comparison, the same study indicated that 79 per cent of the same respondents felt that more should be done to encourage people to learn about Civil Defense practices. Ninety per cent believed that the public should be told of the hazards of a nuclear war.[14]

Apparently, a paradoxical pattern emerges wherein the public, knowing very little about Civil Defense, and making little self-effort to learn, nevertheless indicates a desire for guidance and action from their government on Civil Defense matters.

If people have possibly been lethargic toward the type of Civil Defense program they want, it is also true that they are seemingly willing to support any government program. An example of this willingness to support was found in answer to the question of whether a sample would be willing to participate in a local Civil

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[13]Rose, P. I., "The Public and the Threat of War," Social Problems 11:73, 1963.

[14]Ibid. , p. 75.

Defense program.[15] Over 62 per cent of the participants indicated they would be willing to volunteer in their local Civil Defense program.

In a poll conducted by AIPO (1961), the question was specifically asked:

> Suppose it was decided in your community to build a public fallout-shelter. Would you or your husband (wife) be willing to work a day or two on weekends or to give one or two days' pay to help build it?[16]

Although this question pertains to only one aspect of the entire Civil Defense program, it seems significant that 77 per cent of the respondents indicated their willingness to support the program.

Summary

The conclusion of this investigator, based on available research, is that the average citizen is one who has expressed fear about the possibility of nuclear war, has obtained little information about nuclear effects, but nevertheless, supports a Civil Defense program. Apparently, this citizen, although he has not expressed the need for a specific type of Civil Defense program, would be amenable to almost any directed effort in the area of Civil Defense education.

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[15] Nehnevajsa, J., Americans' Views on Civil Defense in the Cold War Context: 1966, p. 133.

[16] Erskine, H. G., "The Polls: Atomic Weapons and Nuclear Energy," Public Opinion Quarterly 27:160, Summer, 1963.

CHAPTER III

PROCEDURES

Source of the Data

The population for this study was selected from the Deaconess School of Nursing, Evansville, Indiana, and the St. Vincent's School of Nursing, Indianapolis, Indiana. The entire senior class of 52 nursing students participated from the Deaconess School, and the 43 nursing students of the entire senior class participated from St. Vincent's School. All tests were administered in an identical manner, the only difference being that the students from Deaconess School were subjected to the independent variable.

Collection of the Data

The Deaconess nursing students were selected to receive the 12 hour PFS course during a two week period in July, 1968. Prior to the first hour of instruction they were asked to complete the attitude scale (Appendix A) as a pre-test of their attitudes toward Civil Defense Adult Education.

Upon finishing the attitude scale, the student nurses were asked to complete the knowledge scale (Appendix B) as a pre-test of their knowledge level about Civil Defense matters.

Two weeks later, during the last class hour of the PFS course, the students were asked to complete the same attitude scale and knowledge scale as a post-test of their attitudes and knowledge about Civil Defense. The same instructions were given to the participants as during the pre-test. After the forms were completed

by the subjects, they were collected by the investigator.

The St. Vincent nursing students were selected to serve as the control group during the experiment. They were administered the same scales in an identical manner both in the pre-test and the post-test by the investigator. The testing occurred during the same time span as with the experimental group.

Instruments

The Civil Defense Adult Education Attitude Scale and the Civil Defense Knowledge Scale were constructed by the investigator. However, many of the statements and questions in the two scales were similar, and in some cases identical, to the type of questions asked by Dr. Richard Willsey in his research.[1]

The attitude measuring instrument was a Likert-type scale[2] which is designed to measure positive attitudes as well as negative attitudes toward Civil Defense Adult Education.

The knowledge measuring instrument was a standard multiple-choice type of examination. Respondents were asked to select the best of four listed answers to each stated question.

The validity, or the degree to which the instruments measured what they purported to measure, was established for both the attitude and knowledge scales by: (1) expert opinion; (2) measuring groups suspected to differ in particular attitudes under investigation.

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[1]Willsey, R., Unpublished Rural Civil Defense Study, Home Demonstration Clubs, Indiana, August, 1967.

[2]Likert, R., "A Technique for the Measurement of Attitudes," Archives of Psychology 22:1-55, April, 1932.

The expert opinion on the content validity of the scales was garnered from three Civil Defense experts at Indiana University plus the Civil Defense Director, Monroe County, Indiana. Based on their comments, minor revisions of the instruments were effected. In addition, many of the same items in both scales had been previously used by the Rural Civil Defense Director of the state of Indiana in his research.

From the standpoint of establishing construct validity, two groups were selected which logically could be thought to possess a significant difference of attitude toward the necessity for Civil Defense Adult Education.

After investigation, the group which was selected as knowing little about Civil Defense, and hence, probably having a negative attitude was the Bedford, Indiana Bridge Club. The group which was selected as probably having a more positive attitude, based on experiences and knowledge, was the Civil Defense Police Auxiliary, Bloomington, Indiana. A total of 28 individuals, 14 from each group, were randomly selected for the test.

The Likert-type attitude scale was administered to both groups. The means, based on the procedures outlined on page 28, were established for both groups. After compiling the means, a test of significance was administered.

Table 4 shows the number of participants in each group, the mean score for each group, the standard deviation for each group, and the result of the *t* test between the independent means.

TABLE 4. MEAN SCORES AND ADDITIONAL DATA USED IN VALIDATION OF ATTITUDE SCALE*

Groups	Type of Scale	Means	Standard Deviation	t Test
Bridge	Attitude	57	6.08	
Police	Attitude	69	3.50	6.49*

(N - Bridge Group = 14, N - Civil Defense Police = 14)

*All Statistical Formulas and Value of t were taken from VanDalen, D. B., Understanding Educational Research, pp. 337, 380, 465.

*$P < 0.001$

While it is true that the results of the data confirm the validity of the instrument, it is significant that the police group emerged with a favorable attitude toward Civil Defense Adult Education, while the Bridge group was classified as neutral. (For explanation of classification, see p. 28) These results could be interpreted to mean that while individuals are perhaps uninformed about Civil Defense education, they are not predisposed against it.

The knowledge scale was also administered to both groups and after the means of the groups were established, a test of significance was administered. Table 5 shows the results for the knowledge scale.

TABLE 5. MEAN SCORES AND ADDITIONAL DATA USED IN VALIDATION OF KNOWLEDGE SCALE

Groups	Type of Scale	Means	Standard Deviation	t Test
Bridge	Knowledge	74.5	11.09	
Police	Knowledge	46.5	6.08	6.79*

(N - Bridge Group = 14, N - Civil Defense Police = 14)

*$P < 0.001$

Since there was a significant difference between the means of both groups in attitude and knowledge, the instruments were considered valid.

Smith stated that if an instrument is designed to differentiate between the means of two or more groups, it should have a reliability coefficient of .80 to be considered effective.[3] The reliability for the attitude scale was tested using the Test-Retest method[4] and for the knowledge scale using the Split-Half method.[5]

A reliability coefficient of .86 using the Test-Retest method[6] was obtained by using eight subjects from the Bloomington, Indiana Civil Defense Police Auxiliary. The subjects were administered the tests over a two week period of time.

Table 6 shows the results of the reliability test using the Split-Half method.

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[3]Smith, M. G., A Simplified Guide to Statistics, p. 99.

[4]Garrett, H. E., Statistics in Psychology and Education, p. 338.

[5]Ibid. , pp. 339-340.

[6]Statistical Formula for Obtaining Reliability Coefficient Taken from VanDalen, D. B., Understanding Educational Research, p. 356.

TABLE 6. OBSERVED RESULTS ON TEST OF RELIABILITY FOR KNOWLEDGE SCALE*

Groups	Type of Scale	Method of Determination	Correlation	Reliability# Coefficient
Bridge	Knowledge	Split-Half	.69	.82
Police	Knowledge	Split-Half	.68	.80

(N - Bridge Group = 14, N - Civil Defense Police = 14)

*Statistical Methods for Determining the Reliability Coefficient Using the Split-Half Method are Obtained from Garrett, H. E., Statistics in Psychology and Education, pp. 339-340.

#Obtained by Use of Spearman Brown Split-Half Formula.

Since both of the scales met the established criterion, they were considered reliable.

The attitude measuring instrument was constructed using 18 statements about Civil Defense. Nine of the statements were positive and nine were negative. Each positive statement about an aspect of Civil Defense was paired with a negative statement about the same aspect of Civil Defense. However, both positive and negative statements were randomly distributed through the instruments.

The responses to each question were arranged on a five-point Likert-type scale from "Strongly Agree" through "Undecided" to "Strongly Disagree". The responses were scored so that a high score would indicate a high positive attitude toward Civil Defense Adult Education and a low score would indicate a negative attitude.[7] Using this method, the following quantitative measure of an individual's attitude could be assessed:

[7]Likert, R., "A Technique for the Measurement of Attitudes," Archives of Psychology 22:1-55, April, 1932.

90 - 72 Strongly Favorable

71 - 53 Favorable

52 - 34 Neutral

33 - 15 Opposed

14 - 0 Strongly Opposed

The knowledge measuring instrument was constructed using 14 multiple-choice questions concerning general Civil Defense practices. An arbitrary weight of seven points was assigned to each question. Using this procedure, the following quantitative measure was selected to assess the knowledge level of the participants.

98 - 84 Highly Informed

83 - 70 Adequately Informed

69 - 56 Poorly Informed

55 - 0 Inadequately Informed

Statistical Procedures

Both the experimental and the control groups were administered the attitude and the knowledge test to determine if there were any differences in initial attitude and knowledge prior to the treatment. After the test, means of both groups were statistically compiled,[8] and a two-tailed t test for significant differences between uncorrelated means was administered.[9]

After the experimental group received the treatment, the same tests were administered to both the experimental and the control

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[8]VanDalen, D. B., Understanding Educational Research, p. 337.

[9]Ibid., p. 380.

group. The same statistical procedure was then followed as outlined in the pre-test sequence. Differences were considered significant at the .05 level of confidence.

CHAPTER IV

FINDINGS

The findings of this study have been presented on the basis of the hypotheses tested and the statistical procedures outlined in the previous chapter. Throughout the experiment, there were a total of 52 student nurses in the treatment group and 43 student nurses in the control group.

In order to determine if there was any significant difference in attitudes between the control and experimental groups prior to the application of the treatment, a pre-test was administered. Table 7 presents the data on pre-test attitudes toward Civil Defense adult education.

TABLE 7. PRE-TEST DATA ON ATTITUDES OF EXPERIMENTAL AND CONTROL GROUPS TOWARD CIVIL DEFENSE ADULT EDUCATION

Groups	Type of Test	Means	Standard Deviation	*t* Test*
Deaconess Nurses (Experimental)	Attitude	64.50	6.55	
St. Vincent Nurses (Control)	Attitude	60.60	3.70	.38**

*All Critical Values of *t* were taken from VanDalen, D. B., Understanding Educational Research, p. 465.

**Not Significant at any Level of Confidence.

Analysis of the data in Table 7 indicated that the *t*-value observed was not significant at any level of confidence. Both groups

were classified as expressing favorable attitudes toward Civil Defense adult education.[1]

In order to determine if there was any significant difference in knowledge level about Civil Defense practices between the two groups prior to the application of the treatment, a pre-test was administered. Table 8 presents the data on pre-test levels of knowledge about Civil Defense.

TABLE 8. PRE-TEST DATA ON LEVELS OF KNOWLEDGE ABOUT CIVIL DEFENSE EVIDENCED BY EXPERIMENTAL AND CONTROL GROUPS

Groups	Type of Test	Means	Standard Deviation	*t* Test
Deaconess Nurses (Experimental)	Knowledge	54.40	5.56	
St. Vincent Nurses (Control)	Knowledge	52.50	5.38	.26*

*Not Significant at any Level of Confidence.

Analysis of the data in Table 8 indicated that the *t*-value observed was not significant at any level of confidence. Both groups were classified as "Inadequately Informed".[2]

Table 9 presents a comparison between the observed pre-test and post-test data of the control group.

[1]See page 28, Chapter III.

[2]*Ibid.*, p. 28.

TABLE 9. PRE-TEST AND POST-TEST DATA ON CONTROL GROUP (ST. VINCENT'S SCHOOL OF NURSING)

Type of Test	Pre-Test Mean	Post-Test Mean	Level of Significance
Attitude	60.60	62.00	Not Significant
Knowledge	52.50	52.90	Not Significant

Analysis of the data in Table 9 indicated a slight insignificant increase in attitude change and knowledge level between the pre-test and the post-test. However, this mean increase was minimal and can be attributed to the incidental learning resulting from the pre-tests.

Table 10 shows a comparison between the observed pre-test and post-test data of the experimental group.

TABLE 10. PRE-TEST AND POST-TEST DATA ON EXPERIMENTAL GROUP (DEACONESS SCHOOL OF NURSING)

Type of Test	Pre-Test Mean	Post-Test Mean	*t* Test	Level of Significance
Attitude	64.50	71.80	1.56	$P > .05$
Knowledge	54.40	79.90	2.02	$P < .05$

Analysis of the data in Table 10 indicated that differences in scores had occurred. Participants exhibited a positive change in attitudes and a positive increase in knowledge after the treatment had been administered. However, the *t*-value observed for the attitude change was

not considered significant at the .05 level of confidence. The t-value observed for the knowledge test was considered significant at the .05 level of confidence.

In terms of favorability as indicated by the scale[3] to measure attitude change, the gain was from the limits of the middle "Favorable" to the upper limit of the "Favorable" category. In terms of increased knowledge as indicated by the scale[4] to measure knowledge change, the gain was from "Inadequately Informed" to "Adequately Informed".

Acceptability of Hypotheses

Hypothesis 1. There is a significant difference of attitude toward the felt need for adult education programs on Civil Defense between student nurses who participated in the PFS course and those who did not participate in this training program.

The following table presents the data observed in testing for significant changes in attitudes of the participants toward Civil Defense adult education.

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[3]See page 28, Chapter III.

[4]Ibid. , p. 28.

TABLE 11. POST-TEST DATA ON ATTITUDES TOWARD CIVIL DEFENSE ADULT EDUCATION OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Type of Test	Means	*t* Test	Level of Significance
Deaconess Nurses (Experimental)	Attitude	71.80		
St. Vincent Nurses (Control)	Attitude	62.00	1.83	$P > .05$

Analysis of the data in Table 11 indicated that the *t*-value observed was not significant at the .05 level of confidence and that a significant change in attitude between the two groups had not occurred. The hypothesis was therefore rejected that a significant change in attitude would occur between the two groups as a result of the treatment.

Further analysis of the data indicated that the experimental group emerged with a higher positive attitude toward Civil Defense adult education. However, as noted above, these changes were not of a significant nature.

Hypothesis 2. There is a significant difference in the knowledge of Civil Defense measures with respect to nuclear effects, between student nurses who participate in the PFS course and those who do not participate in this training program.

Table 12 presents the data observed in testing for significant change in knowledge level about Civil Defense practices among the participants.

TABLE 12. POST-TEST DATA ON LEVELS OF KNOWLEDGE ABOUT CIVIL DEFENSE PRACTICES EVIDENCED BY EXPERIMENTAL AND CONTROL GROUPS

Groups	Type of Test	Means	*t* Test	Level of Significance
Deaconess Nurses (Experimental)	Knowledge	79.90		
St. Vincent Nurses (Control)	Knowledge	52.90	2.16	$P < .05$

Analysis of the data in Table 12 indicated that the *t*-value observed was significant at the .05 level of confidence and that significant changes in knowledge had occurred among the experimental group. The hypothesis was therefore accepted that a significant difference in Civil Defense knowledge would occur among student nurses who participated in the PFS course compared with those who did not participate. Further analysis of Table 12 indicated that the experimental group emerged with a knowledge classification of "Adequately Informed" while the control group emerged with a classification of "Inadequately Informed".

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The following is an analysis and evaluation of: (1) changes of attitude toward the need for Civil Defense adult education; (2) changes in the level of knowledge concerning Civil Defense practices among selected participants of the 12-hour Personal and Family Survival Course. As a result of this study it was possible for the investigator to make a value judgment on the effectiveness of this cited Civil Defense course.

The purpose of this study was: (1) to construct, validate, and test two instruments, one which measured attitude change toward Civil Defense adult education, and one which measured level of knowledge about Civil Defense practices; (2) to evaluate the effectiveness of the PFS course in terms of attitude change and knowledge gained on the part of selected participants.

Data Collection. The data gathered for this experiment were furnished by 52 senior student nurses from the Deaconess School of Nursing, Evansville, Indiana. The St. Vincent School of Nursing, Indianapolis, Indiana furnished 43 senior student nurses who functioned in the role of control group. All participants were administered the Civil Defense Adult Education Attitude Scale and the Civil Defense Knowledge Scale as a pre-test and post-test of attitudes and knowledge under investigation.

The students from Evansville, Indiana received the 12 hour Personal and Family Survival Course and functioned in the study as

the experimental group. The only stipulation placed on each participant was that she must not have previously attended a course on Civil Defense.

Procedures. The scales were constructed by the investigator using available resource material. Both scales were content validated through expert opinion, and construct validated empirically by using known populations. In addition, a measure of reliability was established for each scale.

Scores of individual participants on both scales were used to compute mean group scores which were examined and tested for significant changes in attitude and knowledge level. Two hypotheses were formulated and tested by the compilation of the means and the testing of these means by use of appropriate t-tests for uncorrelated data. Differences in pre-test data were also compiled, tested, and evaluated.

Findings. The following is a summary of the findings of the analysis and evaluation of differences in attitudes about Civil Defense education among selected participants. In addition, a summary is included of the findings relative to the change in knowledge level among the participants.

1. Both the experimental and control groups of student nurses exhibited a favorable attitude towards Civil Defense adult education prior to the commencement of the PFS course. No difference of attitude could be considered significant at the .05 level of confidence.

2. Both groups, prior to the beginning of the PFS course, were evaluated on the basis of their pre-test scores as being "Inadequately Informed" with respect to Civil Defense knowledge. No difference in attitude was considered significant at the .05 level

of confidence.

3. No significant differences in attitude or knowledge change was recorded by the control group between the pre-test and post-test administration of the scales.

4. After completing the PFS course, it was ascertained that the experimental group, while increasing their mean score on the attitude scale, did not incur a significant difference, at the .05 level of confidence, from their pre-test attitude score.

5. After completing the PFS course it was found that the experimental group achieved a significant difference at the .05 level of confidence between their pre-test and post-test knowledge score.

6. After the treatment, a more positive attitude change was exhibited by the experimental group's mean score. However, the attitude change was not considered significant at the .05 level of confidence between the groups.

7. With respect to knowledge increase, there was a significant difference at the .05 level of confidence between the mean scores of the experimental group, after treatment, and those of the control group.

Conclusions

1. Based on evidence as presented in Chapter IV, both groups of student nurses exhibited a favorable attitude, prior to the treatment, toward Civil Defense adult education. Thus, it appears among student nurses of this study that the Personal and Family Survival Course is not necessary to bring about favorable changes of

attitudes toward the necessity for Civil Defense adult education.

2. It was concluded by this investigator that most of the student nurses in the experimental group began their experience with such a favorable attitude toward education, that it is not likely that their attitudes could be significantly increased in a positive manner.

3. It was concluded by this investigator that the Personal and Family Survival Course is extremely valuable in teaching participants about the effects of nuclear weapons and instilling good Civil Defense practices. While both groups were initially classified as being "Inadequately Informed", after the treatment the experimental group was considered "Adequately Informed".

4. It was the opinion of this investigator that the results of the Personal and Family Survival Course, in terms of increased knowledge among the participants, furnishes justification for continuing to maintain the course in the state of Indiana.

Recommendations

1. Because of the proven clinical effectiveness of the Personal and Family Survival Course in raising the knowledge level about Civil Defense practices among senior nursing students, it is recommended that consideration be given by the state of Indiana in maintaining the course at its present level of frequency.

2. It is recommended that a study similar to this be conducted using an entirely different type of population. The possibility exists that since student nurses are in the process of

being educated, they are highly predisposed to any type of educational program. If this is the case, the results may be entirely different if this research is applied, for example, to a volunteer fire organization.

3. It is recommended that further research be conducted concerning the expressed type of Civil Defense adult educational program needed by the citizenry.

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APPENDICES

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Appendix A

Attitudes About Civil Defense Education

ATTITUDES ABOUT CIVIL DEFENSE EDUCATION

We would like to know how you feel about certain issues concerning the value of education as part of the Civil Defense program. For each of the statements that follow, please circle the description underneath the statement which best expresses your view point. This survey is anonymous so do not write your name any place on this form.

1. The Federal and State governments must assume the responsibility for the protection of citizens from the immediate effects of a nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

2. Most people would worry less about the danger of nuclear war if they attended a course on Civil Defense.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

3. Life would still be worth living after a nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

4. An educational course dealing with survival is one of the most effective ways to help people prepare for nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

5. The cost of any worthwhile Civil Defense Adult Education course would be just too great.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

6. There must be a better way to help people to prepare for nuclear war than by giving a Civil Defense course on survival.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

7. Responsibility for protection from the immediate effects of a nuclear war would rest with each individual citizen.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

8. I wouldn't voluntarily attend a course on Civil Defense because it is likely life would be unbearable after a nuclear war anyway.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

9. The government is going to have to give more emphasis to Civil Defense because there is very little an individual can do to survive the effects of a nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

10. If a cost-free course on Civil Defense were available during leisure hours, most citizens would probably enroll.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

11. If an individual is properly educated, he can do a great deal to protect himself against the effects of a nuclear attack.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

12. An effective Adult Education program in Civil Defense could be taught with a minimum amount of expense to the government.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

13. I fail to see how any course on Civil Defense can be of any great benefit to me in the event of a future nuclear attack.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

14. Attending an Adult Education course on Civil Defense would likely make more people worry about the danger of a nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

15. No Civil Defense educational program on survival can be very effective because there really is no adequate defense against the effects of a nuclear attack.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

16. Most people would rather spend their time on some leisure activity rather than taking a voluntary course on Civil Defense.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

17. A short (12-15 hour) Adult Education course on Civil Defense would be worthwhile in teaching people how to survive after and during a nuclear war.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

18. Most people can survive after a nuclear war if they apply certain individually learned protective measures.

a. STRONGLY AGREE b. AGREE c. UNDECIDED d. DISAGREE e. STRONGLY DISAGREE

Appendix B

Knowledge About Civil Defense

KNOWLEDGE ABOUT CIVIL DEFENSE

The following questions are related to the effects of nuclear weapons. Please circle the letter next to the answer which you choose.

1. If an H-Bomb hit a large city, how far away from where it fell do you think almost everybody would be killed?

   a. Up to 5 miles

   b. 5 miles to 10 miles

   c. 10 miles to 20 miles

   d. 20 miles or over

2. Which one of the following statements about radiation is true?

   a. Radiation sickness is contagious. If you get close to someone who has it, you are likely to become sick.

   b. Boiling removes radioactive contamination from water.

   c. Radiation is not very harmful as long as you don't look at it.

   d. Most radioactive fallout rapidly loses its strength.

3. Which one of the following is true about radiation?

   a. You cannot be protected against radiation.

   b. The closer a person is to the source of radiation, the more shielding is necessary.

   c. Radiation from fallout makes all exposed foods inedible.

   d. Once a person has been exposed to radiation he will die unless he is immediately treated.

4. It is generally recommended that a shelter be stocked with supplies sufficient to allow a family to live for:

   a. 48 hours

   b. One week

   c. Two weeks

   d. One month

5. Which of the following pairs of materials would you consider the most effective protection (shielding) against the effects of radioactive fallout?

   a. Newspapers and books

   b. Dirt and bricks

   c. Wood and wood products

   d. Ceiling and wall insulation

6. The most widespread effect of a nuclear explosion is:

   a. Thermal damage caused by intense heat

   b. Radioactive contamination

   c. Destruction caused by the effects of the blast

   d. Climatic change caused by a nuclear explosion

7. In case of a nuclear attack 100 miles away, it would be best to:

   a. Attempt to quickly improve an existing poor shelter

   b. Stay in a house providing poor protection

   c. Get into a car and carefully drive in the opposite direction

   d. Walk or drive a mile or more to a home or public shelter providing good protection

8. Which of the following types of nuclear blasts is the most dangerous from the standpoint of radioactive fallout?

   a. A high altitude burst

   b. A sub-surface burst

   c. A surface burst

   d. An air burst

9. If you were to hear a wavering tone or a series of short blasts lasting for three minutes, this signal would tell you:

   a. To turn your radio to the Emergency Broadcasting System (EBS) for further instructions

   b. That there is evidence of an impending attack

   c. To go as quickly as possible to the nearest shelter

   d. That a nuclear attack has occurred

10. If you were to hear a steady 3-to-5 minute sounding of a siren or some similar device, this signal would tell you:

   a. That an "all clear" has been sounded and the nuclear attack is over

   b. To be on "alert" because a hostile attack is expected

   c. To move as quickly as possible to the nearest shelter

   d. That a nuclear attack has occurred

11. If there were a large scale nuclear attack on the United States, what percentage of the population would escape the immediate effects of the weapons?

   a. 10-20 %

   b. 20-30 %

   c. 40-50 %

   d. 60-70 %

12. After a nuclear attack, water which has been stored in closed or covered containers:

   a. Must be decontaminated before it is drunk

   b. Must be boiled to remove radioactive fallout before it can be used

   c. May be consumed by livestock, but not humans

   d. Is safe to consume

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13. After a nuclear attack, foodstuffs, such as canned and packaged goods, which have been stored indoors:

    a. Probably will have absorbed too much radiation to be eaten

    b. Should be reasonably safe to eat

    c. Must be decontaminated before eating

    d. Must be treated with a solution of phosphorous 32 before being eaten

14. People who live in remote non-industrialized parts of the United States:

    a. Are unlikely to receive many of the effects from a nuclear attack

    b. May receive some effects, but do not have to construct home shelters

    c. Should have some type of shelter program

    d. Are more likely to receive the effects of a nuclear attack than other members of the population

VITA

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