In-Service Education: An Evaluation of Title III Project Epic

Patricia M. Skrocki
Western Michigan University

Follow this and additional works at: https://scholarworks.wmich.edu/dissertations

Part of the Teacher Education and Professional Development Commons

Recommended Citation
Skrocki, Patricia M., "In-Service Education: An Evaluation of Title III Project Epic" (1970). Dissertations. 3040.
https://scholarworks.wmich.edu/dissertations/3040
IN-SERVICE EDUCATION: AN EVALUATION OF TITLE III PROJECT EPIC

by

Patricia M. Skrocki

A Dissertation
Submitted to the Faculty of the Graduate College
in partial fulfillment of the Degree of Doctor of Education

Western Michigan University
Kalamazoo, Michigan
December 1970
ACKNOWLEDGMENTS

The researcher wishes to express her sincere appreciation to the following doctoral committee members who have made this study possible: Dr. Dorothy McCuskey, Chairman, Dr. William Coats, Dr. Leo Stine, and Dr. Charles Brown, for their perceptive and constructive criticism, interest, assistance and guidance. She wishes to thank the Cooperative Educational Research Laboratory, Incorporated, CERLI, for the financial assistance necessary to carry out the study. She also wishes to thank the staff of Project EPIC for making the study possible.

Patricia M. Skrocki
SKROCKI, Patricia M., 1930-
IN-SERVICE EDUCATION: AN EVALUATION OF
TITLE III PROJECT EPIC.

Western Michigan University, Ed.D., 1970
Education, teacher training

University Microfilms, A XEROX Company, Ann Arbor, Michigan
# Table of Contents

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th></th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>THE STUDY</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Statement of the Problem</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Significance of the Study</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Assumptions</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Scope of This Study</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Limitations of This Study</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Definitions of Terms</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Overview of This Study</td>
<td>8</td>
</tr>
<tr>
<td>II</td>
<td>REVIEW OF THE LITERATURE</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Traditional Approaches to In-Service Education</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Innovative Strategies for In-Service Education</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Sensitivity Training</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Openness in the Belief System</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Studies Utilizing Rokeach Dogmatism Scale</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Behavioral Feedback</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Interaction Analysis</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Studies Utilizing Interaction Analysis</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Summary of Related Research</td>
<td>41</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>METHODS AND PROCEDURES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Subjects</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Comparison Group</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Instruments</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Rokeach Dogmatism Scale</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>CBCS Matrix</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Method</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Hypotheses</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Statistical Treatment of Data</td>
<td>57</td>
</tr>
<tr>
<td>IV</td>
<td>PRESENTATION AND ANALYSIS OF DATA</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Hypotheses</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Results for Hypothesis One</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis One</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Results for Hypothesis Two</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Two (a)</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Two (b)</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Two (c)</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Results for Hypothesis Three</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Three (a)</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Three (b)</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Testing Hypothesis Three (c)</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Results for Hypothesis Four</td>
<td>73</td>
</tr>
</tbody>
</table>

iv

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rokeach Dogmatism Scores for Experimental and Control Group</td>
</tr>
<tr>
<td>2</td>
<td>Seeking-Accepting/Giving-Rejecting Ratios of CBCS Matrices for Experimental and Control Groups</td>
</tr>
<tr>
<td>3</td>
<td>Percentage of Verbal Behavior Devoted to Giving, Seeking, and Accepting of Affect as Recorded on CBCS Matrices for the Experimental and Control Groups</td>
</tr>
<tr>
<td>4</td>
<td>Thinking/Memory Ratios as Recorded on CBCS Matrices for the Experimental and Control Groups</td>
</tr>
<tr>
<td>5</td>
<td>Rokeach Dogmatism Scores Before and After Sensitivity Training</td>
</tr>
<tr>
<td>6</td>
<td>Seeking-Accepting/Giving-Rejecting Ratios From CBCS Matrices Before and After Sensitivity Training</td>
</tr>
<tr>
<td>7</td>
<td>Percentage of Verbal Behavior Devoted to Giving, Seeking, and Accepting of Affect from the CBCS Matrices Obtained Before and After Sensitivity Training</td>
</tr>
<tr>
<td>8</td>
<td>Thinking/Memory Ratios from CBCS Matrices Obtained Before and After Sensitivity Training</td>
</tr>
<tr>
<td>9</td>
<td>CBCS Ratios for Seeking-Accepting/Giving-Rejecting Before Sensitivity Training and Three Months Later</td>
</tr>
</tbody>
</table>
TABLE PAGE
10 Percentage of Verbal Behavior Devoted to Giving, Seeking, and Accepting of Affect Before Sensitivity Training and Three Months Later ............................................. 71
11 Thinking/Memory Ratios from CBCS Matrices Before Sensitivity Training and Three Months Later .............................................................. 72
12 Correlations Scores: Rokeach Dogmatism with CBCS Seeking-Accepting/Giving-Rejecting Scores ............................................................................ 74
13 Correlation Scores: Rokeach Dogmatism with CBCS Giving, Seeking, and Accepting of Affect ........................................................................ 77
14 Correlation Scores: Rokeach Dogmatism with CBCS Thinking/Memory ............................................................ 79
15 Mean Scores from the CBCS Matrices at Three Time Intervals ................................................................. 81
CHAPTER I

THE STUDY

This study was part of the evaluation of Project EPIC (Educational Planning and Information Center), a Title III program carried out in Calhoun County, Michigan during the school year of 1967-68 for the purpose of providing in-service education for teachers. The project was funded on August 1, 1967 for $249,635 over a three year period.

Each teacher in Calhoun County, public, private, or parochial was eligible to attend the training classes of Project EPIC. They had first to obtain permission to enroll from their principal. Project EPIC then paid for a substitute teacher while the teacher was at the training classes.

The training classes consisted of two parts: sensitivity training consisting of intimate interaction sessions designed for self-understanding which were carried out daily for two weeks; and in-service training which consisted of four observations in the classroom, each followed by a day of seminar where the objective data relevant to operationalized goals were discussed in the mornings, with afternoon sessions devoted to discussions
of problems in education.

The model for these training classes was developed by Project EPIC with the assistance and guidance of the regional laboratory, Cooperative Educational Research Laboratory, Incorporated, known as CERLI. The staff of Project EPIC and the researcher attended a workshop during the summer of 1967 at Appleton, Wisconsin where they became familiar with the methods and materials utilized in the CERLI in-service program. It was at this time that the researcher became interested in conducting a study to determine if participants changed their behavior as a result of taking part in the training classes.

Statement of the Problem

The purpose of this study was to determine: (1) if the teachers enrolled in the training classes of Project EPIC would become more open in their belief system as a result of sensitivity training; and (2) if sensitivity training or the in-service seminars utilizing objective feedback were successful in helping teachers change their behavior in the classroom.

Significance of the Study

While in-service education has been carried out for many years,
it is only in recent years that projects have been designed with higher degrees of psychological theory. The Project EPIC training classes, which constituted an innovative in-service program, were assumed to be designed to test the validity of these assumptions: (1) that sensitivity training would lead to increased openness in the belief system; and (2) that objective measures of teacher behavior such as audio and video tapes and interaction analysis schemes, or feedback, would help teachers change their behavior. This type of in-service project should be of interest to professional educators at all levels of schooling.

Assumptions

Inherent in this study are the following assumptions:

1. That verbal behavior in the classroom is an adequate sample of one's total teaching behavior.

2. That the Rokeach Dogmatism Scale, Form E, is an adequate instrument to measure changes in the openness of the belief system.

3. That the CERLI Behavior Classification System interaction analysis scheme called the CBCS Matrix, is an adequate instrument to record and measure changes in the verbal behavior of teachers.

4. That the study of how teachers change their behavior as a result of an in-service program can contribute to future in-service program design.
Scope of This Study

This study was an in-depth evaluation of an innovative Title III program funded under the Elementary-Secondary Education Act of 1965. It consisted of fourteen subjects who were teachers from Calhoun County, Michigan. These teachers each had two weeks of sensitivity training with the same two co-trainers, and all participated in in-service seminars led by the same leader who was different from the sensitivity co-trainers. The behavior of these teachers was measured and recorded on two instruments before and after sensitivity training and again three months later to determine if there were behavioral changes which could be related to the training classes.

Limitations of This Study

The number of subjects in this study was fourteen. More potential subjects were eliminated because it was decided to hold constant the co-trainers for sensitivity training and the leader of the in-service seminars.

Three months was chosen as a desirable time interval for the followup study on the participants. This eliminated any subjects enrolling after the month of March.
Because of the limitations of human resources, time, and money, it was decided to limit the observations to thirty minute intervals.

It was not possible to use randomization of subjects in the research as Project EPIC was designed without this in mind. A time study was done utilizing two instruments. The Rokeach Dogmatism Scale was used twice, before and after the sensitivity training, while the other instrument, the CBCS Matrix, was used three times, before and after the sensitivity training, and again three months later. The Rokeach Scale was not used three months later since it was thought the subjects might be resistant at that time.

A comparison group was observed to determine if the teachers who were subjects in this study were representative of other teachers in Calhoun County, Michigan on the dimensions studied.

Definitions of Terms

Terms used in this study are defined at this point.

Affect. According to Krathwohl, affect refers to the

\[\text{David R. Krathwohl, Benjamin S. Bloom, and Bertram S. Masia, Taxonomy of Educational Objectives: Affective Domain (New York: David McKay Company, 1954), 7.}\]
feeling tone of the classroom; it applies when the teacher deals with emotion.

**CBCS Matrix.** CBCS Matrix is an acronym for CERLI Behavior Classification System, an interaction analysis scheme developed by the Cooperative Educational Research Laboratory, Incorporated (CERLI). The CBCS Matrix will be found in the Appendix.

**Giving, seeking, and accepting of affect.** As used in this study, the phrase denotes the percentage of verbal behavior used by teachers to express or give a feeling or emotion, to seek student feelings or emotions, and to accept student feelings or emotions.

**In-service seminars.** As used in this study, in-service seminars refer to the small group seminars held during the third and fourth weeks of the training classes of Project EPIC. Interaction analysis data were supplied to the group by the researcher and other trained personnel. The other personnel also video taped classroom sessions for use in the classes. Teachers brought in their own audio tapes. The group collectively analyzed the data to help the teachers determine if they had reached their operationalized goals. The leader of the seminars led the discussions which also included problems and issues in education.
Openness in the belief system. Rokeach\textsuperscript{1} defines openness in the belief system as "being less closed in the cognitive system, less authoritarian, and more tolerant of the views of others."

Seeking-accepting/giving-rejecting ratio of verbal behavior. As used in this study, this phrase expresses the ratio of verbal behavior used by teachers to seek responses and accept behavior as compared to that verbal behavior spent giving information and rejecting behavior.

Sensitivity training. McGregor\textsuperscript{2} defines sensitivity training as:

A group consisting of from ten to fifteen people and a trainer or two co-trainers who meet for a number of successive periods. A common pattern involves a two week program with daily weekday meetings. The group supplies its own content in the form of the behavior of its members during the meetings: the impact of one's behavior on others, the reactions to behaviors of others, and the phenomena of group activity and its significance. This provides an opportunity for improving skills in social interaction.

Thinking/memory ratio of verbal behavior. As used in this study, this phrase expresses the ratio of verbal behavior


used by teachers to give, seek, accept, and reject productive or critical responses (thinking behavior) as compared to the verbal behavior used to give, seek, accept, and reject recognition or memory responses (memory behavior).

Training classes of Project EPIC. The training classes of Project EPIC consisted of two parts: two weeks of sensitivity training, and two weeks of in-service seminars.

Overview of This Study

Chapter I was an introduction to this study which was part of an evaluation of a Title III project.

In Chapter II the literature on the major topics covered by this study will be reviewed.

In Chapter III the methods and procedures utilized in this study will be described.

In Chapter IV there will be a presentation and analysis of the data obtained in this study.

In Chapter V there will be a summary of the findings and conclusions drawn from the data.
CHAPTER II

REVIEW OF THE LITERATURE

This chapter will review the following major topics covered in this study: (1) traditional approaches to in-service education; (2) the innovative strategies of sensitivity training and the use of behavioral feedback in in-service programs; (3) the concept of openness in the belief system; (4) studies utilizing the Rokeach Dogmatism Scale; and (5) research on the use of interaction analysis.

Traditional Approaches to In-Service Education

In-service education has changed in theory and practice as pre-service education has changed in theory and practice. During the nineteenth century and the first few years of the twentieth century when pre-service education was inadequate in-service education took the form of teacher's institutes which supplemented the pre-service education received.

By 1910, the institutes were becoming anachronisms and were under severe attack. Attendance was mandatory in rural areas, but city institutes tended to disappear as their teachers became better prepared. Summer schools were legally established in
fourteen states by this time. Extension courses, after-hour classes, and correspondence study were also being used to supplement the pre-service education during these years.

According to Richey,\(^1\) by 1933, "institutes were losing ground steadily and there were unmistakable tendencies toward substituting other forms of in-service education." By this time most high school teachers had four years of college, and more than three-fourths of the teachers had two or more years of college.

Corey\(^2\) stated that it was during the 1940's when the group dynamics movement caught on. The in-service programs emphasized learning how to work effectively in groups and most curriculum in-service projects were approached in this manner.

After some disappointment with the group dynamics approach, the action research movement evolved. Corey\(^3\) described action research as "that research undertaken by practitioners in order


\(^3\)ibid.
to improve their practices." He saw less definitive testing of hypotheses than in controlled or experimental research, but he also saw much greater relevancy for the findings. He stated that action research may be more useable than experimental research where there are broad and complicated problems involving many variables which cannot be eliminated or entirely controlled.

Corey\textsuperscript{1} went on to equate the theory of action research with the concept of in-service education which had evolved: action research was focused on problem situations, generally involving the participation of many persons, and provided an outlet for the creativeness of the teachers.

Richey\textsuperscript{2} in his chapter on the history of in-service education in the National Society for the Study of Education 1957 Yearbook, \textit{In-Service Education}, saw action research as the newest, most promising agency for in-service education. In the decade since then, action research has lost favor with in-service educators. It has been replaced in many places by two newer methods of in-service education: sensitivity training and the use of behavioral feedback.

\footnote{ibid.}

\footnote{Richey, op. cit.}
Innovative Strategies for In-Service Education

Sensitivity Training

The discussion of sensitivity training, or t-group theory will include a brief historical treatment of its development, the objectives of sensitivity training, what proponents and opponents say about sensitivity training, and a review of the research on changes in the openness of the belief system as a result of sensitivity training.

According to Benne, the origins of sensitivity training, or training group theory usually called t-group theory, can be traced to a workshop at State Teachers College in New Britain, Connecticut held during the summer of 1946. The main objective was to develop more effective leaders. Participants came mainly from teaching and social work, with a few interested businessmen and lay citizens.

Group discussion was the major teaching-learning device used, with no plans for the analysis of the here-and-now as a source of learning. Group members found that if they were

confronted more-or-less objectively with data concerning their own behavior and its effects, and if they could avoid being defensive about these data, they were able to achieve meaningful learnings about themselves, the responses of others to them, group behavior, and group development in general. At that time, no thought was given to the exclusion of other content. In later training classes at New Britain, conflict developed between discussing the here-and-now happenings and some outside case material. The outside problems were later rejected as being less involving and less fascinating.

A characteristic of sensitivity training groups was the means of providing feedback to the group concerning its behavior and development. A common pattern established was the use of a rotating schedule of participants who acted as feedback observers from day-to-day in collaboration with the trainer. The present pattern more commonly used is that all members of the group continually feed back on member, interpersonal, and group functioning.

The current definition of sensitivity training groups or t-groups as cited earlier is:

A group consisting of from ten to fifteen individuals and a trainer or two co-trainers who meet for a number of successive periods. A common pattern involves a two week
program with daily weekday meetings. The group supplies its own content for learning in the form of the behavior of its members during the meetings: the impact of one's behavior on others, the reactions to behaviors of others, and the phenomena of group activity and its significance. This provides an opportunity for improving skills in social interaction.¹

Weschler² stated that "sensitivity training was founded on the belief that human relations understandings and skills can be developed." Its aim was to help participants feel differently, and not merely think differently, about the many human relations problems they are likely to face. This was brought about, first, by helping them to increase their awareness of how others think, feel, and are likely to behave (social sensitivity); and second, by helping them to acquire the ability to act appropriately in varying interpersonal situations (behavioral flexibility).

Benne³ listed the following as objectives for sensitivity training:

¹McGregor, op. cit.


1. Greater awareness by participants of sensitivity to emotional reactions and expressions in himself and others.

2. Greater ability by participants to perceive and to learn from the consequences of his actions through attention to feelings, his own and others.

3. Greater clarification and development of personal values consonant with democratic and scientific approaches to problems of social and personal decision and action.

4. Greater development of concepts and theoretical insights which will serve as tools in linking personal values, goals, and intentions to actions consistent with these inner factors and with the requirements of the situation.

5. Greater achievement of behavioral effectiveness in transactions with one's environment.

6. Greater opportunities to apply new learnings in back-home situations.

7. Greater development by each learner of skills to analyze his own process of learning.

Sensitivity training has both its proponents and its opponents. The proponents have published more articles, reports, and research than the opponents. It was difficult to summarize the various findings on sensitivity training since the researchers have examined many variables and outcomes. Variables explored included: interpersonal relations, roles of group members, emotional dynamics, the training process, basic group processes, formation of group structure, and phases of group development.
Generally, it seems that most proponents saw sensitivity training groups as vehicles for gaining more insight into one's behavior and that of others, as well as greater understanding of the group process.

House, an opponent of sensitivity training, reviewed abstracts of research projects. In analyzing sixteen such reports, he concluded that the underlying assumptions and theory of sensitivity training or t-group method were poorly defined and of questionable validity. He went on to state that there are both positive and negative effects of training, and little is known of the process of training. He raised the question of ethics: (1) the violation of privacy since few subordinates have a real choice of whether or not to attend, and do not really know what they are getting into; and (2) the legitimacy of subjecting people to the acknowledged anxiety produced by the group. He recommended that commercial distribution of trainers be discontinued, and that controlled experimental research be continued on carefully selected and guarded subjects.

---

Project EPIC, being a proponent of sensitivity training, stated in their application for an Operational Grant in 1967 that "sensitivity training would be conducted to encourage educators to become more open to new ideas and aware of their own and student needs."

A survey of 128 research studies on the effects of sensitivity training uncovered only one study concerned with changes in the belief system. Apparently researchers have not been interested in this effect of sensitivity training. Bunker found that participants were more open to change after such an experience than before. He utilized a matched-pair control group with open-ended behavior change descriptions which were obtained from five to seven co-workers and self for each subject. An objective coding system was used to increase reliability and to permit assessment of the content of the components in each subject's total change score. All scoring was done without knowledge of the classification of the subject. Agreement between independent scoring decisions

---


of trained scorers exceeded ninety percent.

Harrison,¹ in a study of cognitive change and participation in sensitivity training, found slight changes three weeks after training, increasing to significant levels three months after training. This supported the model of change suggested by Harrison² where the sensitivity training had an "unfreezing" effect which to some degree created a need for change. New behaviors were tried out during the second phase of search and experimentation when change actually took place. This was followed by "refreezing" of behavior where behavior is re-established.

Theory holds that it is during the "unfreezing" phase of sensitivity training that participants tend to become more open in their belief system and more accepting of the ideas of others.


Openness in the Belief System

Rokeach\(^1\) of Michigan State University has done extensive work on belief systems in connection with his work on dogmatism. He saw dogmatism as consisting of a relatively closed cognitive organization of beliefs and disbeliefs about reality, which were organized around a central set of beliefs about absolute authority, which in turn, provided a framework for patterns of tolerance and qualified tolerance toward others.

Dogmatism, according to Rokeach,\(^2\) involved the convergence of three highly interrelated sets of variables: closed cognitive systems, authoritarianism, and intolerance. Dogmatism could be observed in religious, intellectual, and cultural activities like philosophy, humanities, and social sciences. One could be dogmatic in an institutionalized system of beliefs or in his own idiosyncratic way.

Seeing the cognitive system as being organized into two interdependent parts, a belief system and a disbelief system, Rokeach\(^3\)


\(^2\)ibid.

\(^3\)ibid.
described their variation in content and structure. Belief-disbelief systems were seen as being represented along a central-peripheral dimension, a time dimension (past, present, and future), and a belief-disbelief dimension where there was interdependence among the parts of the belief system, of the disbelief system, and between the systems.

Rokeach\(^1\) saw a continuum ranging from the "closed mind" to the "open mind" with "open mind" being more oriented to the present than to the past or to the future, with less discrepancy between the degrees of differentiation of belief and disbelief, and with less degree of communication between central and peripheral beliefs.

Rokeach\(^2\) stated that beliefs could not be directly observed, they had to be inferred as best one could from the things the believer said or did. He saw one's total belief system as being composed of five types of beliefs which varied in depth. The beliefs could be ordered along a central-peripheral dimension with Type E, the inconsequential beliefs less central than Types A, B, C, and D. Type E beliefs were often intensely held

\(^1\)ibid.

and often represented matters of taste. They had few, if any connections with other beliefs.

Type D, the derived beliefs, were less central than Types A, B, and C. Type D beliefs often concerned matters of fact we accepted because they were from an authoritative source like Encyclopedia Britannica or The New York Times.

Type C, authority beliefs, and Type D were less central than Types A and B. Type C beliefs concerned positive and negative authority or reference groups. Such beliefs concerned not only which authorities could know, but also which authorities would know. The authorities relied on would differ from one person to the next and would depend on learning experiences within the person's social structure—family, class, peer group, ethnic group, religious and political groups, and country.

Type B, primitive beliefs with zero per cent consensus, were less central than Type A. Type B beliefs were impervious to persuasion or argument by others. Type A, or primitive beliefs with one hundred per cent consensus were so taken for granted that they were seldom the object of discussion or controversy such as, "I believe this is a book."
Rokeach\(^1\) saw Type A as very deeply held beliefs which were very resistant to change. As one went out the central-peripheral dimension toward Type E, they became more easily changed.

Rokeach saw these five types as being factorially distinct. He developed a Belief Inventory to determine the types of beliefs one holds.

In another study he developed an inventory consisting of Types A, C, and D. He excluded Type B as being unsuitable for investigation by group questionnaire methodology. Type E beliefs were excluded as being inconsequential.\(^2\) Upon examination, the Dogmatism Scale was determined to consist of Types C and D items where people might logically be expected to change in a short period of time.

The primary purpose of the Rokeach Dogmatism Scale was "to measure differences in openness and closedness belief systems."\(^3\) The Dogmatism Scale was developed by scrutinizing various defining characteristics of open and closed systems.

\(^1\)ibid.

\(^2\)ibid.

\(^3\)loc. cit., p. 71.
and then constructing statements designed to tap these characteristics. Each statement had to be designed to transcend specific ideological positions in order to penetrate to the formal and structural characteristics of all persons. Persons adhering to such diverse belief systems as Capitalism and Communism, Catholicism and anti-Catholicism should all score in a direction opposite to others having equally diverse, yet undogmatic viewpoints.¹

Studies utilizing Rokeach Dogmatism Scale.--Bidwell² did a study on two constructs of openness--those of Rokeach and of Carl Rogers. In each theory open persons could evaluate stimuli in the present experience without reliance on irrelevant internal or external pressures; they evaluated stimuli on the basis of judgments and authority of others. The theory of Rogers was derived from studies of changes in personality in client-centered therapy, while Rokeach studied the organization of the belief-disbelief system.

Bidwell did her study to determine if a person would have

¹loc. cit., p. 72.

the same degree of openness on the Rogers and on the Rokeach instruments. The findings indicated that neither construct could be used as a predictor for a score of openness on the other construct. She also concluded that the Rokeach Dogmatism scores appeared not to be affected by the course content, interpersonal relationships, or class activities.

Ehrlich attempted the first direct test of learning and resistance to change utilizing the Rokeach Dogmatism Scale and a sociology true-false test in an introductory sociology course with 57 subjects. He found the dogmatism scores of subjects were significantly negatively related to the test performance at the three time intervals of precourse, postcourse, and 5-6 months followup. He concluded "subjects low in dogmatism entered the sociology classroom with a higher level of learning, learned more as a result of classroom exposure, and retained this information to a significantly greater degree than the more dogmatic subjects."

In a replication of Ehrlich's study, Costin, using a

\[\text{\textsuperscript{1}}\text{Howard J. Ehrlich, "Dogmatism and Learning," Journal of Abnormal and Social Psychology, DXII (1961), 148-149.}\]

psychology class of 67 students found that dogmatism was not related to classroom performance. He concluded that "there was more than one kind of closed-mindedness and/or that the content of learning was the crucial variable in the difference between the two studies."

Two further studies reiterated these contradictory findings. Christensen\(^1\) in a partial replication without controls, reported no significant correlation between dogmatism and two postcourse measures of performance in an introductory psychology classroom.

Costin\(^2\) in a later study used the same design that he had used previously, but used two measures of classroom performance, a test of psychological principles and a test of conventional misconceptions about human behavior. He found that dogmatism was correlated positively with students' retention of psychological misconceptions, but was not related to their acquisition of basic psychological principles. The correlation for dogmatism and retention of misconceptions

\(^1\)C. M. Christensen, "A Note on 'Dogmatism and Learning'," \textit{Journal of Abnormal and Social Psychology}, DXVI (1963), 75-76.

was .35, significant at the .01 level, while dogmatism and learning of basic principles had a correlation of -.004. He concluded that closed-minded subjects may be more resistant to change of old beliefs than to the acquisition of new beliefs.

Druckman\(^1\) compared the performance of high- and low-dogmatism subjects in playing the roles of union and management representatives in a simulated bargaining game. He found that high-dogmatism subjects resolved fewer issues, were more resistant to compromise, and were more likely to view compromise as defeat.

Pyron and Lambert\(^2\) in a study of the measure of acceptance of change using their scale and Rokeach Dogmatism scores, reported correlations of -.29 and -.43 both significant at the .01 level. They found that the greater the closed-mindedness the greater the rejection of change.


Vacchino, Strauss, and Schiffman\(^1\) reported a correlation of -.25, significant at the .05 level, between dogmatism scores and scores on the need-for-change scale of the Edwards Personal Preference Schedule. They also reported a correlation of -.23, significant at the .05 level, between dogmatism and the conservatism factor of the Sixteen Personality Factor Questionnaire. They concluded: "In regard to conservatism, the dogmatic subjects were confident in what they had been taught to believe, accepted the tried and true despite inconsistencies, and were cautious and compromising in regard to new ideas, generally going along with tradition."

Norris\(^2\) in studying attitude change, found that closed-minded subjects changed significantly more than open-minded subjects when exposed to a set of persuasive communications coming from a presumed positive authority.


Ehrlich and Lee\textsuperscript{1} reviewed over 40 studies utilizing the Rokeach Dogmatism Scale to study the relation of open and closed cognitive structures to the acquisition of new beliefs and to the resistance to change of old, previously learned beliefs. They concluded that:

The magnitude of the correlations between the variables has been moderately low where measured in the classroom studies and not established in almost all of the other research. Most of the noncorrelational studies have assumed that the relation of dogmatism to the study variable has been monotonic and linear, and most designs have involved the comparisons of extreme scores. Despite these obvious methodological shortcomings, these studies considered together provide a consistent set of findings, most of which are in accord with the theoretical expectations. Given the available data, the basic proposition appears to be generally correct: closed-minded persons are less able than open-minded persons to learn new beliefs and to change old beliefs. Nevertheless, the principle remains to be qualified by a consideration of five intervening variables: the authority-source of the new beliefs, the syndrome relevance of their mode of communication, the belief congruence and novelty of the new beliefs, and their centrality to the individual.

None of the studies reviewed utilized the Rokeach Dogmatism Scale as pre and posttest to measure changes in open-mindedness as the result of a learning experience as was done in this study.

Behavioral Feedback

The second psychological assumption being tested in the Project EPIC training classes was that objective measures of teacher behavior, or feedback, would help teachers change their behavior.

Goodman stated that feedback is customarily used in connection with the concept of a "loop." Together the words "feedback" and "loop" implied closure; indeed they implied closure of a kind which usually had progress as its direct result. It emphasized the fact that information about a particular piece of behavior could be compared to the intended behavior and future behavior could be modified.

Feedback, or knowledge of results from the output, or performance of a task, affected the individual in establishing or altering levels of aspiration, which in turn influenced the future responses or output of the system, according to Costello. He cited a study done by Rao and Russell at the University


College of London where the subjects were extremely sensitive in adjusting to the feedback provided. There were indications that performance as well as aspirations suffered from negative feedback. Costello saw the basic elements of a feedback system as involving: (1) the orderly collection of information; (2) the feeding of this information into the system; and (3) its use in making further adjustments.

Strom\(^1\) stated that to change one's behavior was difficult, unless a source of direction and guidance was available, and at the present time, most teachers have no feedback regarding their behavior in the classroom. Information was relevant when it was connected to the self, for the self was the instrument through which lasting behavioral change took place.

Daw and Gage,\(^2\) reporting on a study done on the effect of feedback from teachers to principals, concluded that when feedback created a condition of imbalance, asymmetry, incongruity, or dissonance, the principals were likely to change their


\(^2\)Robert W. Daw and N. L. Gage, "Effect of Feedback from Teachers to Principals," *Journal of Educational Psychology,* DVIII (August, 1967), 181-188.
behaviors concerned in the directions desired by their teachers.

People have always operated on feedback, sometimes deliberately, other times not. There were many stimuli in any given environment at any given time, each in turn providing either informal or formal feedback. Feedback could also be classified as subjective or objective. Regardless of which dichotomy was used, when feedback had been blended into the background system of purposes, values, and policies, it did control the next step. Our decisions were conditioned by perceptions of how we were doing in terms of what we had hoped to do.

The in-service seminars of Project EPIC were designed to feedback objective data from audio and video tapes and interaction analysis schemes to help teachers improve their perceptions of how they were doing in the classroom, and finally to improve their educational decisions. According to Wilhelms, educational decisions were far too often the judgments of hunch and impression and rumors and even prejudice, because an organized flow of significant feedback had been neglected.

---

Interaction Analysis

In this section interaction analysis will be defined and described, its historical development traced briefly, and the research utilizing interaction analysis will be reviewed.

During recent years, there has been a trend toward studying teacher behavior as it is, not as it should be. A theoretically sound and practical approach which has developed is the recording of the verbal behavior, either of the teachers, the students, or both. This method is called verbal interaction analysis.

Verbal interaction analysis systems developed before the CBCS Matrix used in this study seem to fall into two types. Type I might be described as the intellectual or cognitive approach. It utilized logical steps in problem solving; it drew on inductive and deductive reasoning; it used the scientific method; it relied heavily on definition of words; it was concerned with the content being taught. Some of the best known of these studies were those of Smith, Aschner, and Meux,¹

Bellack, Taba, and Jackson.

Withall, Flanders, and Amidon and Hunter were representative of those studying teacher influence and verbal communication as it related to teaching without analyzing the content being taught. These studies might be grouped into Type II, or the affective approach. Their descriptive work may contribute to the groundwork for further research.

Each scheme of verbal interaction analysis involved the use of observers making judgments. Some analyses were made live in the classroom, while others utilized tape recordings or tape scripts. The observers scrutinized instruction by taking into account each bit of verbal interaction. This procedure

1 Arno A. Bellack, The Language of the Classroom: Meanings Communicated in High School Teaching (New York: Teachers College, Columbia University, 1963), 1-274.


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
was designed to minimize difficulties and to permit a systematic recording of spontaneous acts. It was an attempt to provide an objective record in a non-valuing manner.

Interaction analysis, according to Flanders,\(^1\) was nothing more and nothing less than an observation technique which could be used to obtain a fairly reliable record of spontaneous verbal statements. Most teacher influence has been exerted by verbal statements, and to determine their quality is to approximate teacher influence.

Storlie\(^2\) stated that interaction analysis described what a teacher had done so he could determine if his actions coincided with his intentions, and if not, how his actions might be changed.

Flanders\(^3\) reminded educators that it was well to remember that only the individual teacher could make the final decision


about what behavior is good or bad, desirable or undesirable.

Amidon and Hunter\textsuperscript{1} saw interaction analysis as the tool for objective feedback which is a necessary component of teacher growth and change, and warned educators that they must continue the process of developing and working with effective feedback systems.

Amidon,\textsuperscript{2} writing with Hough, stated that for a teacher to improve his teaching three factors should probably be present: (a) the teacher should want to improve; (b) the teacher should have a model of the kind of teaching behavior he wanted to improve; and (c) the teacher should get feedback regarding his progress toward the development of those teaching behaviors he conceptualized as his goals. Research on the training of teachers which has involved the use of interaction analysis has indicated that the second and third conditions necessary for change are produced by interaction analysis. Interaction analysis provided

\textsuperscript{1}Edmund J. Amidon and Elizabeth Hunter, Improving Teaching (New York: Holt, Rinehart, and Winston, 1967), 141-149.

the teacher with a means for receiving immediate feedback regarding his own behavior.

Training activities involved in becoming proficient in the assessment of spontaneous behavior, in and of themselves, increased the sensitivity of teachers to their own behavior and the behavior of others according to Flanders.¹

Studies Utilizing Interaction Analysis. — Flanders, Zahn, Furst, Moskowitz, and Kennedy were among those reporting research studies which tended to support the virtues of using interaction analysis to change the behavior of teachers, students, and prospective teachers.

Flanders² conducted a study in which teachers were trained to observe classroom interaction by recording types of verbal statements, tabulating events into a matrix, and interpreting matrices in terms of teacher influence patterns. Each teacher was observed before and after the in-service training of thirty hours where he received feedback about his behavior, either by having an observer, a team of colleagues, or by using a

¹Ned A. Flanders, "Teacher Behavior and In-Service Programs," Educational Leadership, XXI (October, 1963), 25-29.

²ibid.
tape recording of his teaching. Teachers most active in training made changes in their classroom behavior in a direction consistent with the program objectives.

Zahn\(^1\) conducted a study to determine the effects of the use of interaction analysis in supervision of student teachers, looking at dogmatism as it related to changes in attitudes of student teachers. He concluded that the quality of the student teacher's performance appeared to be related to the strength of his belief-disbelief system.

According to Furst,\(^2\) student teachers having been taught interaction analysis did differ significantly from a control group not taught interaction analysis in that those in the experimental group used more total teacher acceptance of student ideas and more total teacher acceptance behavior. They also used less teacher rejection of student behavior, and less total teacher

---


rejecting behavior.

Moskowitz\(^1\) reported on a study done to determine the effects of the use of interaction analysis on the behavior of student teachers and cooperating teachers. She found that the trained cooperating teachers and trained student teachers used significantly more indirect teaching patterns than untrained cooperating teachers and untrained student teachers. Interaction analysis was used on student teacher behaviors, not the cooperating teachers who did seem to acquire certain insights (feedback), and applied them to their own teaching. She concluded that training in interaction analysis appeared to have a positive effect on: (a) the way in which cooperating teachers taught; (b) the way in which their student teachers taught; and (c) the interpersonal relationships between teachers and their student teachers.

In a study to determine the effectiveness of interaction analysis

analysis as an in-service technique, Kennedy\textsuperscript{1} reported on a field experiment in eastern Tennessee. The vast number of teachers combined with geographic distances and rural isolation served to mitigate against the use of traditional in-service programs. Nine elementary schools were involved: three schools received a self-instructional program on interaction analysis only; three schools received the self-instructional program plus telelecture instruction; and three schools served as controls. The experiment lasted for eighteen weeks. The Flanders system of interaction analysis was used. Kennedy concluded that the program was not effective in promoting either greater teacher indirect influence or student involvement. He speculated that this may have been due in part to the method used to introduce the study. Some teachers resented having to take part in the study, particularly on the short notice of one week. Other teachers resented not having released time for the in-service work. This study pointed to the desirability of involving the participants in the planning of an in-service program.

\textsuperscript{1}John J. Kennedy, Donald L. Haefele, and Richard D. Ruff, \textit{The Effectiveness of Two Interaction Analysis Instructional Modules Within an In-Service Setting} (University of Tennessee, March, 1969), 1-91.
Flanders reported on an in-service training project utilizing sound filmstrips, interaction analysis, and self-directed experimentation. Fifty-one teachers were observed before the training to determine their spontaneous pattern of verbal influence: direct or indirect. They then participated in a nine week in-service training program in which they learned to assess their own patterns of verbal influence, to experiment with different patterns, and to try to establish principles of teacher influence from their experimentation.

There were two groups, one where the instructor stimulated more verbal participation on the part of the teachers, and a typical lecture-discussion method of instruction. Teachers who were classified as more indirect were quite sensitive to the difference in the two programs, for in the group stimulating more verbal participation, they experimented more in their classrooms, and became more indirect in their classrooms. The more direct teachers made significantly more changes than the more indirect teachers in the typical lecture-discussion group.

Summary of Related Literature

The traditional approaches to in-service education were reviewed with the emphasis on supplementing pre-service education. In recent years, as pre-service education has improved, in-service education has taken various forms: group dynamics, action research, behavioral feedback, and sensitivity training.

This review of the literature revealed that there has been over twenty years of experimentation and some research in the fields of group dynamics and sensitivity training. The literature was filled with descriptive studies and persistent and optimistic hypotheses about the values of these techniques, although only one study had direct bearing on the subject being investigated in this study, the change in the belief system as a result of sensitivity training.

Behavioral feedback theory was described as was its use in in-service programs. Many new in-service programs now utilize this approach which tries to move from making value judgments concerning teaching, toward supplying objective measures of behavior as feedback in order to help teachers change their behavior.

Interaction analysis was one of the commonly used methods
of supplying behavioral feedback. Research studies cited show that this has been a useful tool for modifying behavior.
CHAPTER III

METHODS AND PROCEDURES

This study was conducted during the school year of 1967-68 on a Title III innovative in-service project in Calhoun County, Michigan, called Project EPIC. The purposes of the study were to determine if teachers who participated in the training classes of Project EPIC: (1) became more open in their belief system as a result of sensitivity training as measured by change scores on the pre and post administration of the Rokeach Dogmatism Scale, Form E; (2) changed their verbal behavior in the classroom after the sensitivity training and/or three months later as measured by change scores on the CBCS matrices; and (3) showed any correlations between changes in the belief system and changes in the verbal behavior in the classroom.

Subjects

Each teacher in the public, private, and parochial schools in Calhoun County, Michigan was eligible to enroll in the training classes of Project EPIC. Not every school system had teachers participating during the course of this study. Only seven of the
smaller districts and no private or parochial school had teachers attending.

The fourteen subjects were chosen to become part of this study because they had the same two co-trainers for sensitivity training and a different, but same leader for the in-service seminars. Each agreed to being part of this study when contacted by the researcher.

The subjects included the following classifications of teachers: two male elementary teachers, seven female elementary teachers, three male secondary teachers, and two female secondary teachers.

Comparison Group

In order to determine if the subjects in this study were representative of other teachers in Calhoun County on the dimensions studied, the researcher collected data on a comparison group of twenty-one subjects using the two instruments: the Rokeach Dogmatism Scale, and the CBCS Matrix. Teachers were contacted in the staff rooms of their schools and asked if they planned on participating, or had participated in the training classes at Project EPIC. Those who replied in the negative to both questions were then asked to become part of
this research project. They were asked to allow the researcher to observe them in their classroom for approximately thirty minutes while there was verbal interaction taking place and they were asked to take the Rokeach Dogmatism Scale. A conference was then held to discuss the data recorded. Complete anonymity was assured to the twenty-one teachers who agreed to participate. Several teachers expressed a desire to be involved in the study, but could not as they did not have classes involving verbal interaction at a time that could be worked into the schedule of the researcher.

The mean score for the experimental group on the pre-test of the Rokeach Dogmatism Scale, Form E was 57.7 with a variance of 118.1, and a standard deviation of 10.8, with a n of fourteen. The mean score for the comparison group on this test was 53.7, with a variance of 132.3, and a standard deviation of 11.5, with a n of twenty-one. A t of 2.042 was required for significance at the .05 level with thirty-three degrees of freedom and a two-tailed expectation (the results could go in either direction). A t of 1.047 was obtained which was significant at the .50 level. There was no reason to believe the experimental group was significantly different from other teachers in Calhoun County on this
dimension of openness of the belief system. These data are shown in Table 1.

TABLE 1
ROKEACH DOGMATISM SCORES FOR EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>57.7</td>
<td>53.7</td>
</tr>
<tr>
<td>Variance</td>
<td>118.1</td>
<td>132.3</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>10.8</td>
<td>11.5</td>
</tr>
<tr>
<td>n</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

\[ t (33 d.f.) 1.047 \text{ significant at the } .50 \text{ level} \]

Using the CBCS Matrix, two ratios and a percentage were compared to determine the representativeness of the experimental group. On the seeking-accepting/giving-rejecting ratio which is comparable to the indirectness/directness ratio of Flanders and Amidon, the mean score for the experimental group was 1.381, with a variance of .650, and a standard deviation of .806, with an \( n \) of fourteen. The comparison group had a mean score of 1.708, with a variance of 1.177, and a standard deviation of 1.084,
with an \( n \) of twenty-one. A \( t \) test on the difference between the means required a \( t \) of 2.042 for significance at the .05 level, with thirty-three degrees of freedom and a two-tailed expectation. A \( t \) of 1.047 was obtained which was significant at the .50 level. There was no reason to believe the experimental group was significantly different than other teachers in Calhoun County on this dimension of openness of the belief system. These data are shown in Table 2.

**TABLE 2**

SEEKING-ACCEPTING/GIVING-REJECTING RATIOS OF CBCS MATRICES FOR EXPERIMENTAL AND COMPARISON GROUPS

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.381</td>
<td>1.708</td>
</tr>
<tr>
<td>Variance</td>
<td>.650</td>
<td>1.177</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>.806</td>
<td>1.084</td>
</tr>
<tr>
<td>( n )</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

\( t (33 \text{ d.f.}) 1.021 \) significant at .50 level

On the percentage of verbal behavior devoted to giving, seeking, and accepting of affect, the mean score for the experimental
group was 2.192, with a variance of 7.225, and a standard deviation of 2.687, with an \( n \) of fourteen. The comparison group had a mean score of 7.100, with a variance of 30.040, with a standard deviation of 5.480 with an \( n \) of twenty-one. Applying a \( t \) test to the difference between the means, a \( t \) of 2.042 was required for significance at the .05 level, with thirty-three degrees of freedom and a two-tailed expectation. A \( t \) of 3.517 was obtained which is significant at the .002 level. These data are shown in Table 3. The experimental group appeared to be significantly lower than the comparison group on this dimension of giving, seeking, and accepting of affect.

**TABLE 3**

PERCENTAGE OF VERBAL BEHAVIOR DEVOTED TO GIVING, SEEKING, AND ACCEPTING OF AFFECT AS RECORDED ON CBCS MATRICES FOR THE EXPERIMENTAL AND COMPARISON GROUP

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.192</td>
<td>7.100</td>
</tr>
<tr>
<td>Variance</td>
<td>7.225</td>
<td>30.040</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.687</td>
<td>5.480</td>
</tr>
<tr>
<td>( n )</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

\[ t \text{ (33 d.f.) 3.517 significant at .002 level} \]
On the thinking/memory ratio, the mean score for the experimental group was 1.826, with a variance of 5.173, and a standard deviation of 2.274, with an n of fourteen. The comparison group had a mean score of 3.651, with a variance of 11.125, and a standard deviation of 3.335, with an n of twenty-one. A t test on the difference between the means required a t of 2.042 for significance at the .05 level, with thirty-three degrees of freedom, and a two-tailed expectation. A t of 1.924 was obtained, which is significant at the .10 level. These data are shown in Table 4. There was some difference between the two groups on this dimension, but it was not so extreme that one could conclude that there was a statistically significant difference on this dimension.
TABLE 4
THINKING/MEMORY RATIOS AS RECORDED ON CBCS MATRICES FOR THE EXPERIMENTAL AND COMPARISON GROUPS

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.826</td>
<td>3.651</td>
</tr>
<tr>
<td>Variance</td>
<td>5.173</td>
<td>11.125</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.274</td>
<td>3.335</td>
</tr>
<tr>
<td>n</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

\[ t (33 \text{ d.f.}) \] 1.924 significant at .10 level

In summary, the fourteen voluntary participants of the training classes of Project EPIC who were the subjects of this study were compared to another group of teachers from the same county who had not volunteered to take the training classes in order to determine how they differed on the four dimensions examined in this study: the openness of the belief system; the percentage of verbal behavior devoted to giving, seeking, and accepting of affect; and the thinking/memory ratio of verbal behavior. There was no reason to believe that the groups were
significantly different on three of the dimensions studied. It was only on the dimension of dealing with affect in the classroom that the experimental group scored significantly lower than the comparison group. This could lead to the speculation that this difference could be related to whether or not the teachers volunteered to take part in the training classes.

Instruments

Rokeach Dogmatism Scale

The Rokeach Dogmatism Scale, Form E, which was incorporated into the Project EPIC evaluation scheme, was the instrument used to obtain data on changes in the openness of the belief system as a result of sensitivity training.

The Dogmatism Scale\(^1\) has gone through five editions to refine the theoretical formulations and to increase the reliability figures. Form E contained the best items from Form D. For each statement, agreement was scored as closed and disagreement as open. Scores ranged from -3 to +3 with 0 point excluded. A constant of 4 was added to each item to obtain a 1-7 scale.

The total score was the sum of scores obtained on all items of the test.

Form E was found to have a corrected reliability of .81 for the English Colleges II sample and .78 for the English worker sample. Other samples later tested at Michigan State University, and at a VA domiciliary obtained reliabilities ranging from .68 to .93. The Ohio State University group had a reliability of .71 obtained by test-retest with five to six months between tests. The reliability of .84 for the VA group was obtained in the same manner with a month between tests. Rokeach saw these figures as quite satisfactory.

In this study the Rokeach Dogmatism Scale was given as a pretest on the first day of sensitivity training, and again as a posttest on the last day of sensitivity training (ten days later), before the in-service seminars had commenced. Form E was administered each time.

The Rokeach Dogmatism scores from before and after sensitivity training were analyzed to determine the statistical significance of the difference between the means. A t-test was carried out.
The CBCS Matrix (CERLI Behavior Classification System), a verbal interaction scheme developed by the Title IV Regional Laboratory, CERLI (Cooperative Educational Research Laboratory, Incorporated), was used to obtain an objective measure of teacher behavior. The CBCS Matrix can be found in the Appendix.

The CBCS Matrix was designed by CERLI staff members during the spring of 1967 prior to the summer workshop at Appleton, Wisconsin, where it was used extensively by approximately thirty educators. It was an advancement over previous systems in that it incorporated features from the Flanders system and from Guilford's levels of cognition. The four process rows of giving, seeking, accepting, and rejecting are very similar to some of Flanders categories. The seeking-accepting rows measure indirectness, while the giving-rejecting rows measure directness. Directness and indirectness are the two dimensions used by Flanders\(^1\) to report his findings on interaction analysis and teacher behavior.

Of the four substantive columns, two were from Guilford's\(^1\) levels of cognition, one dealt with affect, while the fourth dealt with class management. The latter two columns are not found in any other system of verbal interaction analysis.

The observer makes a decision whenever a tally is recorded, first deciding which process row applies, then which substantive column, then correlating the two.

The researcher conducted a reliability test using a tape recording of a classroom situation and the test-retest method developed by Scott and described by Flanders. The correlation figure obtained was .84. These data are found in the Appendix.

**Method**

Each subject was observed on three separate occasions for thirty minutes. The teacher chose the time when the observation was to take place and each subsequent observation was done on a comparable situation. Other than the teacher knowing that she was being observed, there were no unusual occurrences or actions. The subject matter being taught included: mathematics, history, home economics, English, spelling.

---

social studies, music, and phonics.

Subjects were observed on three separate occasions with two instruments: (1) before sensitivity training both the Rokeach Dogmatism Scale and the CBCS Matrix were used; (2) immediately after sensitivity training both instruments were used again; and (3) three months after the first observation the CBCS Matrix was used a third time, but the Rokeach Dogmatism Scale was not readministered.

The CBCS Matrices recorded before and after sensitivity training were utilized by the in-service leader and the teachers as objective feedback in the in-service seminars.

The following ground rules or procedures were set up to insure uniformity:

1. Each observation was approximately thirty minutes long.

2. The three observations done on each teacher were done on comparable situations.

3. A tally on the CBCS Matrix represents one verbal utterance, a single word, or a complex sentence.

4. If the teacher found it necessary to switch to behavior that was not verbal interaction, that is if he decided to read to the class, give a test, or stopped to cope with some unexpected event which disrupted the basic instructional situation for more than a few minutes, the researcher stopped recording, noting the time. If the teacher returned to verbal interaction, the researcher resumed recording, again noting the time. A tally was
recorded on the matrix for each ten seconds of sustained talking or lecturing. If the teacher did not resume verbal interaction, the researcher scheduled another observation for the time when the teacher planned to do so.

Hypotheses

The research hypotheses investigated in this study were:

1. Teachers enrolled in the training classes of Project EPIC will become more open in their belief system after sensitivity training than they were before.

2. Teachers enrolled in the training classes of Project EPIC will change their verbal behavior after sensitivity training.
   a. There will be an increase in the seeking-accepting/giving-rejecting ratio.
   b. There will be an increase in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.
   c. There will be an increase in the thinking/memory ratio.

3. Teachers enrolled in the training classes of Project EPIC will change their verbal behavior after the training classes.
   a. There will be an increase in the seeking-accepting/giving-rejecting ratio.
   b. There will be an increase in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.
   c. There will be an increase in the thinking/memory ratio.
4. There will be a relationship between changes in the openness in the belief system and changes in the verbal behavior of teachers enrolled in the training classes of Project EPIC.

a. There will be a positive relationship between changes in the openness of the belief system and changes in the seeking-accepting/giving-rejecting ratio of verbal behavior.

b. There will be a positive relationship between changes in the openness of the belief system and changes in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.

c. There will be a positive relationship between the changes in the openness of the belief system and changes in the thinking/memory ratio.

**Statistical Treatment of Data**

Utilizing the data obtained from the CBCS Matrix, three sets of scores were analyzed: the seeking-accepting/giving-rejecting ratio; the percentage of verbal behavior devoted to giving, seeking, and accepting of affect; and the thinking/memory ratio. These scores were analyzed as pre and post scores using the two time intervals: before and after sensitivity training, and before sensitivity training and three months later. Each time a t-test was done to determine if the difference between the means was statistically significant.

A Pearson Product Moment correlation \( r \) was computed using

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
the Rokeach change scores from before and after sensitivity training with the three sets of change scores from the CBCS Matrix at the two previously mentioned time intervals. A t test was done on the r values obtained to determine their statistical significance.

All data were coded and key punched on cards. The statistical analysis was done at the Computer Center at Western Michigan University.

Findings were reported regardless of the level of statistical significance obtained, but the hypotheses were accepted or rejected at the usual .05 level of significance. Barnes\(^1\) states:

> the researcher may be exceeding his responsibility and right to pre-judge the matter for other people by setting a decision point in advance of experimentation. The experimenter is free to use his findings as he sees fit, but he would show more consideration and courtesy if he would simply indicate his findings as 'significant at the ___% level' and leave decisions regarding the use of his findings to those interested in reading his report.

The argument for using this approach is that very large differences are needed to show statistical significance at the .05 or the .01 level, therefore many studies are dismissed as not being statistically significant, when there is great practical significance and the results are in the desired direction. This

is called Type I error, or the probability of rejecting the null hypothesis incorrectly.

In behavioral science research lack of attention to Type II error may be the reason we are not finding significant differences very often. Type II error is the probability of accepting the null hypothesis incorrectly. A researcher can never know definitely if he is rejecting or accepting the null hypothesis correctly. He must decide on the practical significance of the data obtained and the possible results to the people involved.
CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

In this chapter the hypotheses and data for each hypothesis will be presented. The data for each hypothesis will be subjected to tests of statistical significance in order to reach a decision on acceptance or rejection.

Hypotheses

Results for Hypothesis One

1. Teachers enrolled in the training classes of Project EPIC will become more open in their belief system after sensitivity training than they were before.

The Rokeach Dogmatism Scale, Form E was used to obtain data on changes in the belief system of the participants of the Project EPIC training classes as a result of sensitivity training. The amount of change in the belief system was determined by obtaining the difference between the means of the pre and posttest scores on the instrument. There was a one-tailed expectation (results would go in one specified direction) that sensitivity training with its emphasis on emotions, affect, and understanding of human relations would create more openness in the belief system.
Testing hypothesis one

The test of this hypothesis was a t test on the difference between the means of the pre and posttest scores of the Rokeach Dogmatism Scale, Form E. The mean of the pre-test was 57.7, with a variance of 118.181, and a standard deviation of 10.871. The mean on the post-test was 56.2, with a variance of 245.104, and a standard deviation of 15.655. With twenty-six degrees of freedom, a t of 1.706 was required for significance at the .05 level. A t of .3084 was obtained which was significant at the .40 level. Data for this hypothesis are shown in Table 5.

Seven of the subjects changed in a positive direction, while the remaining seven changed in a negative direction. Although the data showed there was a slight change in the degree of openness in the hypothesized direction, hypothesis one is rejected at the usual .05 level of significance.
TABLE 5
ROKEACH DOGMATISM SCORES
BEFORE AND AFTER SENSITIVITY TRAINING

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>57.7</td>
<td>56.2</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>118.181</td>
<td>245.104</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>10.871</td>
<td>15.655</td>
</tr>
</tbody>
</table>

\( t (26 \text{ d.f.}) \cdot 0.3084 \) significant at the .40 level

Results of Hypothesis Two

2. Teachers enrolled in the training classes of Project EPIC will change their verbal behavior after the sensitivity training.

   a. There will be an increase in the seeking-accepting/giving-rejecting ratio.

   b. There will be an increase in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.

   c. There will be an increase in the thinking/memory ratio.

The CBCS Matrix was used to obtain data on changes in the verbal behavior of the participants in the training classes of Project EPIC. The amount of change in verbal behavior was

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
determined by computing the difference between the means of two sets of scores, before and after sensitivity training.

**Testing hypothesis two (a)**

The test of this sub-hypothesis was a t-test on the difference between the means of the seeking-accepting/giving-rejecting ratios obtained by administering the CBCS Matrix before and after sensitivity training. There was a one-tailed expectation that sensitivity training would lead to more openness in the belief system, which in turn would lead to more indirect (seeking-accepting) teacher behavior. The mean score on the first observation was 1.381, with a variance of .650, and a standard deviation of .806. The mean score on the second observation was 1.310 with a variance of .528, and a standard deviation of .727. With twenty-six degrees of freedom, a t of .2471 was obtained, significant at the .40 level. Data for this sub-hypothesis are shown in Table 6.

These data showed that half of the subjects showed an increase in their seeking-accepting/giving-rejecting ratio of verbal behavior while the remainder showed a decrease. The overall change was not in the hypothesized direction, so it
would seem that the sensitivity training had the relation opposite to that hypothesized. Hypothesis two (a) is therefore rejected at the usual .05 level of significance.

**TABLE 6**

SEEKING-ACCEPTING/GIVING-REJECTING RATIOS FROM CBCS MATRICES BEFORE AND AFTER SENSITIVITY TRAINING

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.381</td>
<td>1.310</td>
</tr>
<tr>
<td>Variance</td>
<td>.650</td>
<td>.528</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>.806</td>
<td>.727</td>
</tr>
</tbody>
</table>

_t (26 d.f.) .2471 significant at less than .40 level

Testing hypothesis two (b)

The test of this sub-hypothesis was a _t_ test on the difference between the means of the percentage of verbal behavior devoted to giving, seeking, and accepting of affect obtained by administering the CBCS Matrix before and after sensitivity training. There was a one-tailed expectation that sensitivity training would lead to more openness in the belief system, which in turn would lead
teachers to become more cognizant of the affective domain in the classroom, which would result in their exhibiting more giving, seeking, and accepting of affect in the classroom. The mean percentage on the first observation was 2.192, with a variance of 7.225, and a standard deviation of 2.687. The mean score on the second observation was 2.071, with a variance of 6.326, and a standard deviation of 2.515. With twenty-six degrees of freedom, a \( t \) of 1.706 was required for significance at the .05 level. A \( t \) of .1234 was obtained, which was significant at less than the .40 level. Data for this sub-hypothesis are shown in Table 7.

While eight subjects showed a decrease in this measure of their verbal behavior, two did not change at all, and four showed an increase. The overall change was in the direction opposite to that hypothesized, that is, the subjects were devoting less of their verbal behavior in the classroom to the giving, seeking, and accepting of affect after sensitivity training than before. Hypothesis two (b) is rejected at the usual .05 level of significance.
TABLE 7
PERCENTAGE OF VERBAL BEHAVIOR DEVOTED TO GIVING, SEEKING, AND ACCEPTING OF AFFECT FROM THE CBCS MATRICES OBTAINED BEFORE AND AFTER SENSITIVITY TRAINING

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.192</td>
<td>2.071</td>
</tr>
<tr>
<td>Variance</td>
<td>7.225</td>
<td>6.326</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.687</td>
<td>2.515</td>
</tr>
</tbody>
</table>

\( t (26 \text{ d.f.}) 0.123 \) significant at less than .40 level

Testing hypothesis two (c)

The test of this sub-hypothesis was a \( t \) test on the difference between the means of the thinking/memory ratio obtained before and after sensitivity training. There was a one-tailed expectation that the emphasis on emotions, affect, and human relations and understanding would lead teachers to be more concerned about higher levels of thinking and less concerned about memory work. The mean score on the first observation was 1.826, with a variance of 5.173, and a standard deviation of 2.274. On the second observation the mean score was 1.033, with a variance of 1.144,
and a standard deviation of 1.069. With twenty-six degrees of freedom, a $t$ of 1.706 was required for a significance at the .05 level. A $t$ of 1.180 was obtained, significant at the .25 level. Data for the sub-hypothesis are shown in Table 8.

The data showed that while six subjects had an increase in the level of cognition in the classroom after sensitivity training, eight showed a decrease. Perhaps there was an interaction effect, with the subjects reacting differently to the situation. Although the overall change was only slightly in the direction opposite of that hypothesized, hypothesis two (c) is rejected at the usual .05 level of significance.

**TABLE 8**

**THINKING/MEMORY RATIOS FROM CBCS MATRICES BEFORE AND AFTER SENSITIVITY TRAINING**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>1.826</td>
<td>1.033</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>5.173</td>
<td>1.144</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>2.274</td>
<td>1.069</td>
</tr>
</tbody>
</table>

$t (26 \text{ d.f.})$ 1.180 significant at the .25 level
Results for Hypothesis Three

3. Teachers enrolled in the training classes of Project EPIC will change their behavior after the training classes.
   
a. There will be an increase in the seeking-accepting/giving-rejecting ratio.
   
b. There will be an increase in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.
   
c. There will be an increase in the thinking/memory ratio.

The CBCS Matrix was the instrument used to obtain data on changes in the verbal behavior of the participants of the Project EPIC training classes. The amount of change was determined by figuring the difference between two sets of scores obtained before sensitivity training and three months later.

**Testing hypothesis three (a)**

The test of this sub-hypothesis was a $t$ test on the difference between the means of the seeking-accepting/giving-rejecting ratio of verbal behavior before sensitivity training and three months later. There was a one-tailed expectation that sensitivity training would lead to more indirect teacher behavior and the use of the interaction analysis scheme would lead to the indirect categories being seen as more desirable with an accompanying shift in verbal behavior.
The mean score of the first observation was 1.381, with a variance of .650, and a standard deviation of .806. The mean score on the third observation three months after the first was 1.799, with a variance of 1.356 and a standard deviation of 1.164. With twenty-six degrees of freedom, a $t$ of 1.706 was required for significance at the .05 level. A $t$ of 1.103 was obtained, significant at the .25 level. Data for this sub-hypothesis are shown in Table 9.

Nine subjects increased their measure of the seeking-accepting/giving-rejecting verbal behavior at the end of the follow-up period, while five had a decrease. The results were in the hypothesized direction, so there may be a relationship between the training classes and the direct/indirect teacher behavior. It was necessary to reject hypothesis three (a) at the usual .05 level of significance.

TABLE 9

CBCS RATIOS FOR SEEKING-ACCEPTING/GIVING-REJECTING BEFORE SENSITIVITY TRAINING AND THREE MONTHS LATER

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>Three Months Later</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>1.381</td>
<td>1.799</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>.650</td>
<td>1.356</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>.806</td>
<td>1.164</td>
</tr>
</tbody>
</table>

$t$ (26 d.f.) 1.103 significant at the .25 level
Testing hypothesis three (b)

The test of this sub-hypothesis was a $t$ test on the difference between the means of the percentage of verbal behavior devoted to the giving, seeking, and accepting of affect obtained by administering the CBCS Matrix before sensitivity training and three months later. There was a one-tailed expectation that sensitivity training with its emphasis on affect would lead to an increased emphasis on affect in verbal behavior as would the use of the interaction analysis scheme. The mean score on the first observation was 2.192, with a variance of 7.225, and a standard deviation of 2.687. The mean score on the third observation, three months later was 4.271, with a variance of 12.176, and a standard deviation of 3.489. With twenty-six degrees of freedom, a $t$ of 1.706 was required for significance at the .05 level. A $t$ of 1.765 was obtained, significant at the .05 level. Data for this sub-hypothesis are shown in Table 10.

On the dimension of giving, seeking, and accepting of affect in the classroom, ten subjects had an increase, while four had a decrease. The results indicated that there was a strong probability that there was a relationship between the training classes of Project EPIC and this change in behavior. Hypothesis three (b) is accepted since it reached the usual .05 level of significance.
TABLE 10
PERCENTAGE OF VERBAL BEHAVIOR DEVOTED TO GIVING, SEEKING, AND ACCEPTING OF AFFECT BEFORE SENSITIVITY TRAINING AND THREE MONTHS LATER

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>Three Months Later</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>2.192</td>
<td>4.271</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>7.225</td>
<td>12.176</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>2.687</td>
<td>3.489</td>
</tr>
</tbody>
</table>

\[ t (26 \text{ d.f.}) = 1.765 \text{ significant at the .05 level} \]

**Testing hypothesis three (c)**

The test of this sub-hypothesis was a t test on the difference between the means of the thinking/memory ratio obtained by administering the CBCS Matrix before sensitivity training and three months later. There was a one-tailed expectation that teachers would want to increase the emphasis on higher levels of thinking and decrease it on memory work as a result of sensitivity training and the use of the interaction analysis scheme. The mean score on the first observation obtained before sensitivity training was 1.826, with a variance of 5.173, and a standard deviation of 2.274. The mean score on the third observation...
three months later was 3.019, with a variance of 3.214, and a
standard deviation of 1.792. With twenty-six degrees of freedom,
a_t of 1.706 was required for significance at the .05 level. A_t of
1.542 was obtained, significant at the .10 level. Data for this
sub-hypothesis are shown in Table 11.

The level of cognition was raised in the classroom by ten
subjects, while four subjects decreased on this dimension. The
results were in the hypothesized direction and close to the level for
statistical significance, indicating that there may be a relationship
between the training classes and the change toward higher levels of
cognition. Hypothesis three (c) was rejected since it did not reach
the .05 level of significance.

**TABLE 11**

THINKING/MEMORY RATIOS FROM CBCS MATRICES BEFORE
SENSITIVITY TRAINING AND THREE MONTHS LATER

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>Three Months Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.826</td>
<td>3.019</td>
</tr>
<tr>
<td>Variance</td>
<td>5.173</td>
<td>3.214</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.274</td>
<td>1.792</td>
</tr>
</tbody>
</table>

_{t (26 d.f, )} 1.542 significant at the .10 level
Results for Hypothesis Four

4. There will be a relationship between changes in openness in the belief system and changes in the verbal behavior of teachers enrolled in the training classes of Project EPIC.

   a. There will be a positive relationship between changes in the openness of the belief system and changes in the seeking-accepting/giving-rejecting ratio of verbal behavior.

   b. There will be a positive relationship between changes in the openness of the belief system and changes in the percentage of verbal behavior devoted to giving, seeking, and accepting of affect.

   c. There will be a positive relationship between changes in the openness of the belief system and changes in the thinking/memory ratio.

The previously analyzed data obtained by administering the Rokeach Dogmatism Scale, Form E, before and after sensitivity training, and by administering the CBCS Matrix before and after sensitivity training, and again three months later were used to test this hypothesis.

Testing hypothesis four (a)

The test of this sub-hypothesis was a Pearson Product Moment test of linear correlation using the Rokeach Dogmatism change scores with two different sets of CBCS Matrix change scores: before and after sensitivity training, and before
sensitivity training and three months later on the dimension of seeking-accepting/giving-rejecting of verbal behavior.

An $r$ of .251 was obtained when the before and after sensitivity training scores were used on both instruments: the Rokeach Dogmatism Scale, Form E, and the CBCS Matrix. There was a one-tailed expectation of a positive relationship since the change in openness in the belief system as a result of sensitivity training was expected to lead to increased indirect (seeking-accepting) teacher behavior. A $t$ test on this $r$ value gave a $t$ of .899, significant at the .25 level. These data are shown in Table 12.

TABLE 12
CORRELATION SCORES: ROKEACH DOGMATISM CHANGE SCORES WITH CBCS SEEKING-ACCEPTING/GIVING-REJECTING CHANGE SCORES

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Before-After Sensitivity Training</th>
<th>Before Sensitivity Training-3 months later</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r$</td>
<td>.251</td>
<td>.287</td>
</tr>
<tr>
<td>$t$</td>
<td>.899</td>
<td>1.037</td>
</tr>
<tr>
<td>level of significance</td>
<td>.25</td>
<td>.25</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
While there was a positive relationship between changes in the directness of the verbal behavior of the teachers and changes in the openness of the belief system as a result of sensitivity training, it did not reach the .05 level for acceptance of the hypothesis.

An $r$ of .287 was computed when the Rokeach change scores from before and after sensitivity training were used with the CBCS change scores figured from before sensitivity training and three months later. There was a one-tailed expectation of a positive relationship since indirect teacher behavior (seeking-accepting) might have been precipitated by sensitivity training and/or the use of an interaction analysis scheme. A $t$ test on this $r$ value produced a $t$ of 1.037, significant at the .25 level. These data are shown in Table 12.

There was a positive relationship between changes in directness of the verbal behavior of the teachers and changes in openness of the belief system as a result of the training classes. It was slightly higher than as a result of sensitivity training, but it still did not reach the value needed for acceptance at the .05 level of statistical significance therefore hypothesis four (a) is rejected.
Testing hypothesis four (b)

The test of this sub-hypothesis was a Pearson Product Moment test of linear correlation. The Rokeach Dogmatism change scores were obtained before and after sensitivity training, while the CBCS Matrix change scores were figured twice, before and after sensitivity training, and before sensitivity training and three months later. The CBCS scores were on the dimension of giving, seeking, and accepting of affect.

An $r$ value of -.073 was obtained when the Rokeach change scores from before and after sensitivity training were used with the CBCS change scores from before and after sensitivity training. There was a one-tailed expectation that there would be a positive relationship between changes in the belief system and changes in dealing with affect since sensitivity training emphasizes the affective domain. A $t$ test on this $r$ value produced a $t$ of .2539, significant at less than the .40 level. These data are shown in Table 13.
### TABLE 13

**CORRELATION SCORES: Rokeach Dogmatism Change Scores with CBCS Giving, Seeking and Accepting of Affect Change Scores**

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Before-After Sensitivity Training</th>
<th>Before Sensitivity Training-3 months later</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( r ) = -.073</td>
<td>( r ) = -.031</td>
</tr>
<tr>
<td></td>
<td>( t ) = 0.2539</td>
<td>( t ) = 0.1079</td>
</tr>
<tr>
<td>level of significance</td>
<td>less than .40</td>
<td>less than .40</td>
</tr>
</tbody>
</table>

The relationship between changes in the openness of the belief system and the giving, seeking, and accepting of affect by the teachers was in the direction opposite of that hypothesized after sensitivity training. It would appear that the results of sensitivity training are not always what is expected.

An \( r \) value of -.031 was obtained when the Rokeach change scores from before and after sensitivity training were used with the CBCS change scores from before sensitivity training and three months later. There was a one-tailed expectation of a positive relationship since either sensitivity training or the use of the interaction analysis scheme, or both, could lead to
greater emphasis on affect in the classroom. A \textit{t} test on this \textit{r} value produced a \textit{t} of .1079, significant at less than the .40 level.

There was not the expected correlation between changes in openness of the belief system and changes in dealing with affect by the teachers after the training classes, in fact, it was in the opposite direction to that hypothesized. Hypothesis four (b) is rejected.

**Testing hypothesis four (c)**

The test of this sub-hypothesis was a Pearson Product Moment test of linear correlation between the change scores obtained by administering the Rokeach Dogmatism Scale before and after sensitivity training, and the two sets of CBCS change scores figured before and after sensitivity training and before sensitivity training and three months later on the dimension of thinking/memory.

An \textit{r} value of -.177 was obtained when change scores from both instruments were figured before and after sensitivity training. There was a one-tailed expectation of a positive relationship because sensitivity training with its emphasis on the affective domain and thinking about human relations might lead teachers
to become less concerned about memory work. A \( t \) test on this
\( r \) value produced a \( t \) of .6243, significant at the .40 level.
These data are shown in Table 14.

**TABLE 14**

CORRELATION SCORES: ROKEACH DOGMATISM
CHANGE SCORES WITH CBCS
THINKING/MEMORY CHANGE SCORES

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Before-After Sensitivity Training</th>
<th>Before Sensitivity Training-3 months Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>( r )</td>
<td>-.177</td>
<td>.316</td>
</tr>
<tr>
<td>( t )</td>
<td>.6243</td>
<td>1.157</td>
</tr>
<tr>
<td>level of significance</td>
<td>.40</td>
<td>.25</td>
</tr>
</tbody>
</table>

This negative low correlation was just the opposite of what had been hypothesized about the relationship between changes in the openness of the belief system and changes in dealing with higher levels of cognition in the classroom.

An \( r \) value of .316 was obtained when the Rokeach change scores from before and after sensitivity training were used with the CBCS change scores figured before sensitivity training and
three months later. There was a one-tailed expectation of a positive relationship since either training with its emphasis on affect and higher levels of thinking and/or the use of the interaction analysis scheme could lead to changes in the thinking/memory ratio of verbal behavior. A \( t \) value of 1.157 was obtained on this \( r \) value, significant at the .25 level. These data are shown in Table 14.

This \( r \) value was in the hypothesized direction, but it did not reach the value needed to accept the hypothesis at the .05 level of statistical significance. It does however, indicate there may be some relationship between changes in the thinking/memory ratio of the verbal behavior of the teachers. Hypothesis four (c) is rejected.

**Additional Data**

Changes which were in opposite direction from that hypothesized after sensitivity training, but became positive as hypothesized at the end of the follow-up period were the indirectness measure, the cognition measure, and the measure of affect in the classroom.

The indirectness measure of seeking-accepting/giving-rejecting ratio was 1.381 before sensitivity training, 1.310 after sensitivity training, and 1.799 three months later. While this change was
not statistically significant, it was in the direction hypothesized and indicated that the training classes had some effect on this measure of verbal behavior. These data are shown in Table 15.

TABLE 15
MEAN SCORES FROM THE CBCS MATRICES AT THREE TIME INTERVALS

<table>
<thead>
<tr>
<th></th>
<th>Seeking-Accepting/Giving-Rejecting Ratio</th>
<th>Giving, Seeking, and accepting of Affect Percentage</th>
<th>Thinking/Memory Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before sensitivity</td>
<td>1.381</td>
<td>2.192</td>
<td>1.826</td>
</tr>
<tr>
<td>After sensitivity</td>
<td>1.310</td>
<td>2.071</td>
<td>1.033</td>
</tr>
<tr>
<td>Three months later</td>
<td>1.799</td>
<td>4.271</td>
<td>3.019</td>
</tr>
</tbody>
</table>

The measure of the cognition level, or the thinking/memory ratio was 1.826 before sensitivity training, 1.033 after sensitivity training, and 3.019 at the end of the follow-up period. The change on this dimension almost reached the level for statistical significance, indicating that there was a relationship between the change on this dimension and the training classes. These data are shown in Table 15.

The emotional climate or affect in the classroom, the giving, seeking, and accepting of affect percentage was 2.192
before sensitivity training, 2.071 after sensitivity training, and 4.271 at the end of the follow-up period. This behavioral change was statistically significant. It was on this dimension that the subjects differed the most from the comparison group and showed the greatest behavioral change.

In the next, and final chapter of this report, Summary and Conclusions, there will be a summary of the findings of this study, the conclusions reached, and the suggestions for further research.
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The Title III developers for Project EPIC assumed that two weeks of sensitivity training could help create an openness in the belief system of teachers, a receptivity to change. It was theorized that if such openness did result from sensitivity training with its emphasis on the affective domain, that teachers would change their verbal behavior as a result of either the sensitivity training and/or the training classes. It was further theorized that there would be a correlation between changes in openness of the belief system and changes in the verbal behavior of the teachers.

The fourteen subjects in this study had the same two co-trainers for sensitivity training, and all participated in the in-service seminars led by the same leader who was different from the sensitivity co-trainers. Each teacher was teaching in the public schools of Calhoun County, Michigan during the school year of 1967-68.

Each subject was observed in the classroom prior to
sensitivity training by the researcher who recorded the verbal behavior of the teacher on the CBCS Matrix. The Rokeach Dogmatism Scale, Form E, was administered by the Project EPIC sensitivity co-trainers on the first day of two weeks of sensitivity training, and again on the last day of sensitivity training. The researcher then observed the teachers on their first day back in the classroom using the CBCS Matrix, before the in-service seminars had begun. Approximately three months after the first observation using the CBCS Matrix, the researcher observed the teachers for a third time using the CBCS Matrix.

The data obtained and analyzed in this study revealed that those teachers who had sensitivity training were more open-minded. Although this behavioral change was not statistically significant, in the opinion of the researcher the program had an effect.

There were some positive relationships between changes in openness of the belief system and verbal behavior of the teachers in the training classes: the seeking-accepting/giving-rejecting ratio at the end of sensitivity training and at the time of the three month follow-up period; and the thinking/memory ratio at the end of the follow-up period.

There were some zero and low correlations between changes
in openness of the belief system and verbal behavior: the
giving, seeking, and accepting of affect both after sensitivity
training and at the time of the follow-up study; and the thinking/
memory ratio after sensitivity training.

Conclusions

This study was limited in scope to the analysis of changes
in the openness of the belief system and changes in the verbal
behavior of a small number of teachers who participated in the
training classes of Project EPIC, therefore the data will only
reveal information about a segment of the experiences of these
people and a segment of the total group who went through the
training classes. The complete evaluation of the in-service
project would ideally include some type of feedback from all
of the participants involved and subsequent behavioral measures
over a period of several years.

The sensitivity training and in-service seminars utilized
in Project EPIC are typical of many in-service programs being
conducted over the country and adequate and comprehensive
evaluation of them is crucial. The types of results obtained
in this study point in a positive direction, however they do need
to be supplemented by more exhaustive and long term studies.
The time pattern of this study made it necessary to examine the cumulative effect of the two elements of the training classes, the sensitivity training and the in-service seminars.

When the data on just the effect of the sensitivity training were analyzed, the following conclusions were reached:

1. There was a slight change toward more openness in the belief system of the subjects.

2. The changes in verbal behavior of the subjects in the classroom were in a direction opposite to that hypothesized, but were so slight that they were not statistically significant.

3. The subjects showed positive relationship between their Rokeach Dogmatism change scores and their seeking-accepting/giving-rejecting indirectness measure although not at a statistically significant level.

The data on the cumulative effect of the two aspects of the training classes as measured at the end of the follow-up period, led to the following conclusions:

1. The subjects changed their verbal behavior in the classroom in the direction hypothesized in that they became more open in their belief system, they
raised the level of cognition in the classroom, and they became more indirect in their relations with the students in the classroom. These changes, while not great enough to be statistically significant, did provide evidence that there was a relationship between these behavioral changes and the training classes.

2. The greatest behavioral change of the subjects was on the dimension where they differed the most from the comparison group, the giving, seeking, and accepting of affect. This dimension increased enough over the three month follow-up period to be statistically significant. It is evident that these teachers had become more aware of and were dealing more with the emotional climate in the classroom as evidenced by the increase in the percentage of verbal behavior in these three areas: the teachers were expressing or giving more feelings or emotions, the teachers were seeking more student feelings and emotions, and the teachers were accepting more student feelings and emotions.

3. The subjects showed positive relationship between
their Rokeach Dogmatism change scores and their seeking-accepting/giving-rejecting indirectness measure. They also showed more positive relationship between their Rokeach Dogmatism change scores and their thinking/memory change scores. While not statistically significant, there was evidence that these sets of scores tended to co-vary together.

When the data for the two time intervals were compared to determine if there were results which supported each other, the following conclusions were drawn:

1. There was only one finding which was basically unchanged, the relationship of the Rokeach Dogmatism change scores with the indirectness measure of seeking-accepting/giving-rejecting.

2. The measures obtained from the CBCS Matrix were changed very little by the sensitivity training, but increased in the direction hypothesized after the training classes where the interaction analysis scheme was used to give teachers feedback about their verbal behavior in the classroom. It was not possible to determine if these changes were
due to the long range effects of the sensitivity training, the effect of the in-service seminars, or a cumulative effect of both parts of the classes.

**Recommendations for Further Study**

The evaluation of a project or program should ideally be built in at the design stage so the desired controls are available. Additional controls suggested in a replication of this study are: (1) a larger number of subjects to reduce the Type II error and to strengthen the design; (2) randomization of subjects to control and experimental groups which would make the groups as much alike as possible at the beginning of the experiment and to help determine if the observed behavioral changes would have occurred in the absence of the experiment; (3) a follow-up with the Rokeach Dogmatism Scale as well as the CBCS Matrix at the three month time interval; and (4) another follow-up at the end of a year or two using both of the instruments along with other behavioral change data.

When the cost of releasing teachers from their classroom for ten days of sensitivity training and four days of in-service seminars is figured, it seems imperative to isolate the effects of the two parts
of the training classes. There is reason to suspect that it is the less expensive aspect, the in-service seminars, that may produce the desired behavioral changes. This is based on observation of the training classes of Project EPIC and conversations with teachers involved and with directors of other projects which utilized variations of the CERLI in-service program.

Future programs of this type would ideally be designed so that the effects of the sensitivity training, the in-service seminars, and the two aspects combined as they were in Project EPIC, could be researched over a period of a year or two in order to determine the long range effects on the teachers involved. The longer time interval would take into consideration the question of how soon one can incorporate change, especially change which takes place during the school year when it may be comparatively difficult to implement changes.
BIBLIOGRAPHY


Christensen, C. M. "A Note on 'Dogmatism and Learning.'" Journal of Abnormal and Social Psychology, DXVI (1963), 75-76.


### CBCS Matrix

<table>
<thead>
<tr>
<th>SUBSTANCES</th>
<th>recognition memory</th>
<th>productive &amp; critical thinking</th>
<th>affect</th>
<th>class management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gives Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeks response</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepts behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rejects behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Test-Retest Reliability on CBCS Matrix Computed by Scott's Method Using Percentage

<table>
<thead>
<tr>
<th></th>
<th>Observation A</th>
<th>Observation B</th>
<th>% A</th>
<th>% B</th>
<th>% Difference</th>
<th>(Average %)²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>Seek-memory</td>
<td>13</td>
<td>17</td>
<td>12.7</td>
<td>12.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Seek-thinking</td>
<td>27</td>
<td>35</td>
<td>26.4</td>
<td>26.1</td>
<td>0.3</td>
<td>6.916</td>
</tr>
<tr>
<td>Seek-affect</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Seek-class mgt.</td>
<td>2</td>
<td>2</td>
<td>1.9</td>
<td>1.5</td>
<td>0.4</td>
<td>0.028</td>
</tr>
<tr>
<td>Give-memory</td>
<td>7</td>
<td>15</td>
<td>6.8</td>
<td>11.2</td>
<td>4.4</td>
<td>0.810</td>
</tr>
<tr>
<td>Give-thinking</td>
<td>22</td>
<td>30</td>
<td>21.5</td>
<td>22.4</td>
<td>0.9</td>
<td>4.796</td>
</tr>
<tr>
<td>Give-affect</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.000</td>
</tr>
<tr>
<td>Give-class mgt.</td>
<td>11</td>
<td>13</td>
<td>10.8</td>
<td>9.8</td>
<td>1.0</td>
<td>1.061</td>
</tr>
<tr>
<td>Accept-memory</td>
<td>4</td>
<td>6</td>
<td>3.9</td>
<td>4.5</td>
<td>0.6</td>
<td>0.176</td>
</tr>
<tr>
<td>Accept-thinking</td>
<td>5</td>
<td>6</td>
<td>4.9</td>
<td>4.5</td>
<td>0.4</td>
<td>0.221</td>
</tr>
<tr>
<td>Accept-affect</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.000</td>
</tr>
<tr>
<td>Accept-class mgt.</td>
<td>0</td>
<td>1</td>
<td>0.0</td>
<td>0.7</td>
<td>0.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Reject-memory</td>
<td>1</td>
<td>1</td>
<td>.9</td>
<td>.7</td>
<td>.2</td>
<td>.006</td>
</tr>
<tr>
<td>Reject-thinking</td>
<td>10</td>
<td>8</td>
<td>9.8</td>
<td>6.0</td>
<td>3.8</td>
<td>.624</td>
</tr>
<tr>
<td>Reject-affect</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.000</td>
</tr>
<tr>
<td>Reject-class mgt.</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

| Totals               | 102           | 134           | 99.6| 100.1| P₀=12.7      | Pₑ=16.251    |

\[ P₀ = \text{percentage of agreement} \]
\[ Pₑ = \text{percentage of agreement expected by chance} \]

\[ \eta = \frac{P₀ - Pₑ}{100 - Pₑ} = \frac{100 - 12.7 - 16.3}{100 - 16.3} = \frac{71.0}{83.7} = .848 \text{ estimated from column 7} \]