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ABSTRACT

This paper describes the developmental phase of the Instructional Staff Development (ISD) program. The purposes of the program are identified as enabling teachers to utilize a) behaviors which would lead to inquiry skill development of the students and b) curricular materials designed for inquiry learning. This paper details the growth of the program, beginning with the instructional design of five steps (sensitization, instruction, practice, implementation, and assessment) for each of the six program components. These components are listed as orientation to inquiry, inquiry influence, inquiry behaviors, behavioral objectives, pupil-centered inquiry, and affective behaviors which promote inquiry. The remainder of the paper details the results of the pilot tests of the ISD program in 1970. (Related documents are SP 006 512, 006 411, 006 412, 006 413, 006 414, 006 415, and 006 515.) (JA)

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Summary of the ISD Program

Recognizing the need for a staff development program to enable teachers to (1) utilize behaviors which would lead to inquiry skill development on the part of students, and (2) effectively utilize curricular materials designed for inquiry learning, the Teachers College of the University of Nebraska - Lincoln, in cooperation with the Mid-continent Regional Educational Laboratory has developed the Instructional Staff Development Program in Inquiry. The program has been field tested and summer workshops have been conducted to prepare trainers.

Six sequential components move teachers through experiences that provide a greater repertoire of teaching behaviors. An instructional model of theory into practice is utilized in each component. This model includes the following steps: sensitization, instruction, practice, implementation, and assessment. Emphasis is on self-analysis and the decision-making role of the teacher. With this focus teachers are encouraged to analyze alternative strategies with the objective of selecting the most appropriate behaviors for promoting inquiry. Evaluation in the form of objective feedback and self-assessment includes the teacher's concepts of inquiry behaviors, the teacher's classroom performance, and student performance and attitude.

The following outcomes have resulted from participation in the program:

1. Teachers have demonstrated their ability to modify their classroom performance in specific ways.
2. Teachers have incorporated a wide variety of behaviors in the classroom.
3. Teachers have successfully designed and implemented inquiry learning experiences.

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4. Students have increased their participation in the learning process.

5. Students have increased their ability to utilize inquiry behaviors.

6. Students have positive attitudes about their learning experiences and their involvement in the inquiry process.

7. Students have demonstrated an increased use of decision-making behaviors in the classroom and in student activities.

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CASE STUDY

Description and Development of the ISD Program in Inquiry

History

In the Spring of 1968 planning was begun by the University of Nebraska Teachers College staff and by the Mid-continent Regional Educational Laboratory for a staff development program which would develop in teachers the ability to identify, select and modify behaviors to produce more student-centered and inquiry-oriented learning. Through experience in the design of pre-service teachers programs the UNL/McREL staff recognized that while increased ability in executing a variety of teaching strategies by pre-service teachers would gradually improve this aspect of education, a much greater impact could be produced by a staff development program for experienced classroom teachers.

With the curricular innovations of the sixties, many teachers realized a need for a greater variety of skills to promote the most effective implementation. The changing role of the teacher from that of "dispenser of information" to "organizer of learning experiences" required a new perspective and ability to utilize a greater variety of skills and teaching behaviors in the classroom. Both of these dimensions focused on the decision-making role of the teacher in terms of selecting those strategies, behaviors, and skills which were the most appropriate for the learning outcomes desired, the curricular materials being utilized, and the type of students taught.

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A team at the University of Nebraska Teachers College under the leadership of Alan T. Seagren as Director and John E. Lux and Floyd D. Urbach as Associate Directors focused attention toward the solution of these problems. From this, the Instructional Staff Development (ISD) Program in Inquiry was conceptualized, developed, pilot tested and field tested.

Instructional Design

Planning for the direction of the program and the strategies for implementing the program were organized with a systems approach using the lattice technique. Six sequential units of study, "Components" of the program, were planned following the instructional model for theory into practice illustrated in Figure 1. Each component included five sequential steps.

Step 1 - Sensitization provided an awareness that there are many alternatives or strategies which might be employed in any given teaching-learning situation and that different kinds of behaviors and skills might be appropriate within these strategies. The intent was for motivation to stimulate and expand thinking.

Step 2 - Instruction included the particular skills or behaviors which had been identified as appropriate for the component. It was the most structured part of the program although actual classroom videotapes of the participants were used as illustrations and as indicators of progress and levels of readiness. The trainer modeled the kinds of inquiry behaviors and strategies which the teachers would attempt to achieve themselves. Instructional sessions were "participant-centered" with decisions being made by the teachers themselves. Assignments of goals were determined by the individual participating teacher. The strategy of "inquiry into inquiry" was used to investigate the nature of inquiry learning.

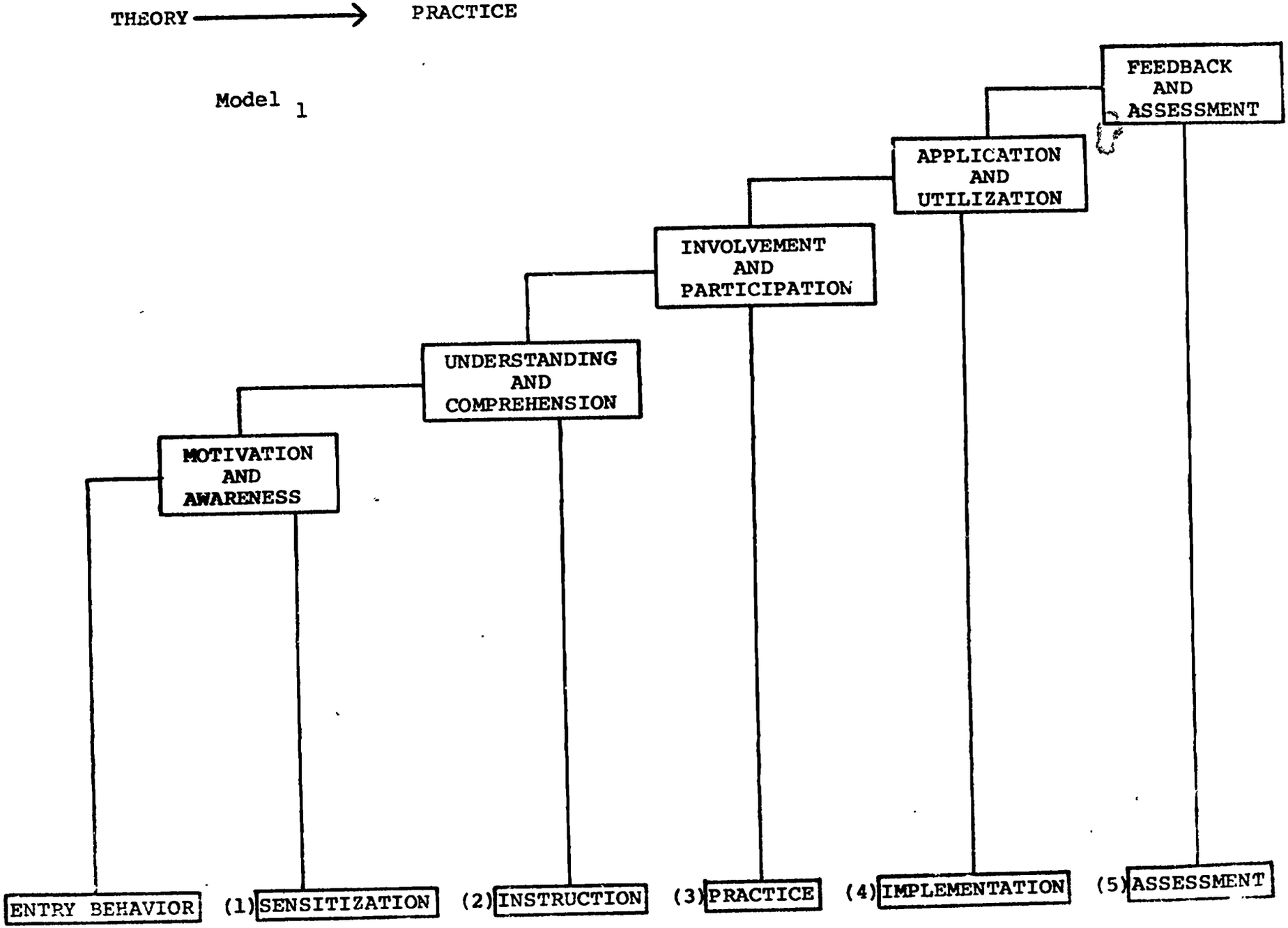

FIGURE 1
Instructional Design

Step 3 - Practice in a controlled setting provided an opportunity to practice skills or behaviors for which participating teachers had received instruction. It was followed by a debriefing session with an orientation to self-analysis.

Step 4 - Implementation provided an opportunity for the teacher to select and apply the skills and behaviors in the classroom that had been the objectives of practice and instructional sessions. Videotaping was used during this step to provide feedback to the teacher.

Step 5 - Assessment included two aspects. First, how effective was the alternative selected in accomplishing the goals; and second, how effective was the teacher in controlling his behavior or utilizing the skills? With some guidance from the trainer, self-analysis was the primary technique used in this step.

Assumptions

1. Teacher behavior can be modified and changed.
2. Behavioral analysis of teaching is both desirable and necessary for any change of teacher behavior.
3. Teachers are concerned about their behaviors and the influence which they have on students in the classroom and they are interested in improving their performance (behavior) through a process of self-analysis.
4. Providing teachers with information about their teaching performance in the form of feedback is important if teachers are to modify and change their behaviors.
5. Teachers can be assisted by supervisors in the process of analysis and assessment if the supervisor focuses on specific kinds of teaching behaviors.

6. Teachers must have a broad understanding of the instructional process in order to select the alternative which is most appropriate on the basis of objectives and students.

Broad Objectives of the Program

1. Teachers will recognize they can control and modify their instructional influence behaviors.
2. Teachers will have an understanding and knowledge about the inquiry process.
3. Teachers will recognize the importance of various inquiry skills and will be able to use these skills in their teaching.
4. Teachers will recognize the various cognitive behaviors of the inquiry process and will be able to use these behaviors in the classroom.
5. Teachers will recognize the affective behaviors that are conducive to inquiry and will be able to use these skills and behaviors in the classroom.
6. Teachers will recognize the importance of inquiry planning and planning related to both content and process.
7. Teachers will recognize the various strategies for inquiry and will be able to use these strategies in the classroom.

Developmental Implementation

In order to determine the effectiveness of the components in reaching the planned objectives, a design was employed that utilized objective pre-post-tests, objectively analyzed observations of the participants in the classrooms, and subjective feedback from participants and from process observer reports.

Five high school BSCS biology teachers and five eighth grade social studies teachers were selected to participate in the developmental phase of the program in 1968-1971. They were selected on the basis of their interest in participating in the project and their interest in increasing their ability in inquiry activities. This provided appropriate and meaningful feedback useful in modifying the program prior to pilot testing.

Three components were designed, implemented, and assessed in the school year 1968-1969. Emphasizing teacher behaviors, they included:

Component I - "Orientation to Inquiry" was designed as an introduction to the program and an exploration into the concept of inquiry learning. In dealing with various aspects of this broad concept, the focus was to stimulate thinking in terms of the characteristics of teacher and student behaviors of inquiry and create a willingness to participate in inquiry strategies and behaviors.

Component II - "Inquiry Influence" focused on the verbal influences used in the classroom as defined by the ten categories of Flanders' Interaction Analysis. Practice in controlling behaviors which implement inquiry objectives was provided through microteaching experiences.

Component III - "Inquiry Behaviors" was a four-dimensional component leading to the recognition and practice of specifically defined inquiry behaviors. The four dimensions included (1) a thirty-four subcategory system of verbal behaviors, The Inquiry Analysis System,[1] which emphasized the types and levels of questions, types of reinforcement, ways to use student ideas, and corresponding kinds of student behaviors; (2) specific

[1]The Inquiry Analysis System is described in the Component III: Inquiry Behaviors manual, pages H308-1 through H308-4.

cognitive behaviors including formulation of the problem, formulating hypotheses, gathering data, interpreting data, making and applying decisions, and assessment; (3) affective behaviors which promote inquiry identified under the general attitudes of openness and inquiry orientation; and (4) plans for classroom activities with consideration of the identified inquiry behaviors.

In the school year 1969-1970, two additional components were designed, implemented, and assessed.

Component IV - "Behavioral Objectives" was a pivotal component shifting emphasis from behaviors of the teacher which were the focus of Components I-III to emphasis on student behaviors, the focus of V and VI. This component dealt with the dimensions of planning with the "Inquiry Plan" as the vehicle for focusing attention on the dimensions of behavioral objectives, levels of Bloom's taxonomy, verbal influences, and cognitive and affective inquiry behaviors.

Component V - "Pupil-centered Inquiry" stresses the student cognitive inquiry behaviors and verbal behaviors. Consideration was given to teacher behaviors and organization of the classroom to promote the opportunity for students to use inquiry behaviors. A transition was made from large group to small group work.

The final component, VI, was designed, implemented and assessed in the school year 1970-71.

Component VI - "Affective Behaviors Which Promote Inquiry" introduced attitudinal factors affecting inquiry. Student and teacher verbal affective behaviors in the areas of openness and inquiry orientation were integrated into the skills of the previous components.

Inquiry Models

To assist teachers in analyzing their own behavior and selecting appropriate alternatives, models of teaching behaviors have been developed. These models were not developed with the intent that they be emulated by the teacher or superimposed upon the teacher. They are intended to be utilized as guidelines by teachers in assisting them in selecting the alternatives and assessing the outcomes. Inquiry teaching and learning take a variety of forms varying according to the amount of freedom given to the learner to make decisions on the content and the process to be followed. The various teaching and learning forms are called inquiry strategies. In this project four distinct inquiry strategies have been used as a part of the instructional packages in the various components. They provide a theoretical framework on which to base the instruction which focused on influence, skills, and behavioral objectives. As indicated in the design of the components, these also proceed from simple to complex in terms of the prerequisite skills and behaviors on the part of teachers. Each of the models is specified in terms of ranges of percentages and behavioral keys. Three models of inquiry were developed: 1. TDI - Teacher-Directed Inquiry; 2. TSDI - Toward Student-Directed Inquiry; and 3. PCI - Pupil-Centered Inquiry.

Pilot Tests

In the spring semester of 1970, two pilot tests were conducted on the three components which had been developed at that time. Five Kearney, Nebraska, public school teachers (two biology, and three social studies) who were trained by a faculty member of Kearney State College comprised one test site. A second site was the Mickle Junior High School, Lincoln, Nebraska, where five social studies teachers were trained by two colleagues

in the same school. Data were collected on the effectiveness of the program and its implementation. These data were used to revise Components I, II, and III.

Evaluation

Four types of evaluation data are collected in the ISD program.

1. Teacher and Student Classroom Performance data are collected using three verbal behavior observational instruments:
   a. The Inquiry Analysis System[2] (IAS) is a modification of Flanders Interaction Analysis which codes thirty-four subcategories of behaviors. This instrument is used with Components I to IV. This provides data on where each participant is in relation to the Inquiry Models since they are described in terms of some of these categories.
   b. The Revised Inquiry Analysis System[3] (Revised IAS) is a three-column simultaneous coding of teacher verbal behaviors, student verbal behaviors, and cognitive inquiry behaviors. It is used in conjunction with Component V. The PCI model is expressed in terms of these categories of behaviors.
   c. The Affective Behaviors Checklist[4] is a system which codes seventeen verbally expressed affective inquiry behaviors. These are specific behaviors which are categorized as "openness" or "inquiry orientation." This instrument is used with Component VI.

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[2]The Inquiry Analysis System is described in the Component III: Inquiry Behaviors manual, pages H308-1 through H308-4.

[3]The Revised Inquiry Analysis System is described in the Component V: Pupil Centered Inquiry manual, pages H508-1 through H508-2.

[4]The Affective Behaviors Checklist is described in the Component VI: Affective Behaviors Which Promote Inquiry manual, pages A609-5 and H608-2.

2. Written Pre-Posttests on each component are as follows:

   a. Component I Pre-Posttest[5] involves the identification of ten audio-taped classroom episodes as examples of either inquiry or non-inquiry. It is used to indicate changes in the participant's perceptions of what constitutes an inquiry session.

   b. Component II Pre-Posttest[6] provides six items which give information on the degree to which each participant can interpret interaction analysis coding. The pretest may be used to determine the level of comprehension of IA before instruction so sessions may be modified accordingly. The posttest results will enable the trainer to determine the success of instruction in this component.

   c. Component III Pre-Posttest[7] is an essay question which asks the participant to describe teaching behaviors utilized in student-centered inquiry discussion. The number and specificity of behaviors mentioned provide an index to the participant's concepts of this type of inquiry.

   d. Component IV Pre-Posttest[8] provides the trainer with information on the ability of each participant to (1) identify behavioral objectives; (2) write behavioral objectives; (3) classify according to the Taxonomy[9]; and (4) plan in terms of these factors. The

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[5]Component I, Pre-Posttest is in the Component I: Orientation to Inquiry manual, page A109-1.

[6]Component II, Pre-Posttest is in the Component II: Inquiry Influence manual, page A209-1.

[7]Component III, Pre-Posttest is in the Component III: Inquiry Behaviors manual, pages A309-1 through A309-2.

[8]Component IV, Pre-Posttest is in the Component IV: Behavioral Objectives manual, pages A409-1 through A409-3.

[9]Benjamin S. Bloom, ed. Taxonomy of Educational Objectives, Handbook I: Cognitive Domain, (New York: David McKay Company, Inc.). 1956.

pretest may be used to determine appropriate instruction in this component and to determine effectiveness of instruction.

e. Component V Pre-Posttest[10] is in two parts. The first part consists of four written items on the definition of PCI, teacher and student behaviors appropriate for PCI, and interpretation of coding from the Revised IAS instrument. In the second part, participants are asked to identify PCI episodes from five videotaped sessions. Concepts of the PCI strategy are reflected by this instrument.

f. Component VI Pre-Posttest[11] includes ten videotaped episodes from which participants are asked to identify affective behaviors. The trainer can determine to which affective inquiry behaviors each participant is sensitive and which ones need additional work.

3. Participant opinionnaires[12] are used in each component to determime the teacher's attitudes and feelings about the strengths and weaknesses of instruction and to get recommendations for changes. This also provides the participant with a reason to review the component's activities and to put them in perspective.

4. Pupil attitudes are determined in two ways: student questionnaires are given at the end of Component VI.[13] After participation in small group activities, students are orally interviewed[14] on their feelings about the session.

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[10]Component V Pre-Posttest is in the Component V: Pupil Centered Inquiry manual, page A509-1.

[11]Component VI Pre-Posttest is in the Component VI: Affective Behaviors Which Promote Inquiry manual, page A609-4.

[12]An example of the participant opinionnaire is found in the Component I: Orientation to Inquiry manual, page A109-2.

[13]Student questionnaire for Component VI is in the Component VI: Affective Behaviors Which Promote Inquiry manual, page A609-2.

[14]Student Interview forms are in the Component VI: Affective Behaviors Which Promote Inquiry manual, page A609-3.

Revision

Using assessment data from developmental implementation and from the pilot tests, written program materials were revised. These materials included a Manual of Workshop Sessions, Trainer's Manuals, and Handout Materials.

Videotaped and audiotaped episodes were revised using original tapes as models. Professional technical quality provided for general distribution usage.

Field Test

In 1971-1972, a field test involving four implementation sites and five trainers was implemented. This resulted in a trainer/participant ratio of approximately 1:5. Two sites included ten BSCS biology teachers from Omaha and Lincoln area schools. The other two sites included heterogeneous subject matter groups of teachers from Lincoln, Nebraska Public Schools. Trainers were classroom teachers who had participated in a three and one-half week summer workshop for preparing ISD trainers. This workshop was held in the summer of 1971 at the University of Nebraska, Lincoln. UNL/McREL staff collected data on participating trainers and teachers, but were not involved in instruction during the field test implementation.

Field Test Evaluation

In addition to data from instruments in the previous "Evaluation" section, the following data were collected on the field test:

1. Checklist of Procedures followed by the Trainer.
2. Process Observer Reports completed by UNL/McREL staff while observing one instructional session of each component.
3. Trainer Reports which provided feedback from the Trainer on his perspective of the instructional sessions and the strengths and weaknesses of the materials or program.

Data From Field Test

The data collected and processed in the field test from the previously described instruments is summarized in the following sections. For brevity, individual data on trainers and participants are not included but are available in the 1972 Assessment Report of the ISD Field Test.

Trainer Results. Three instruments were used to gather data on the trainers (T_2's): (1) a checklist completed by the trainer, (2) a Process Observer Report compiled by UNL/McREL staff members, (3) Trainer Report completed by the trainer. A final summary of the results of these instruments follows.

The checklists indicated that in general, Components I, II, and III procedures were followed as written although Trainer D omitted some steps in II and III because of time factors. Trainers A, B, and C either followed the components as written or combined sessions but included all steps. Components V and VI were followed by Trainer B, but each of the other three trainers combined sessions and/or omitted some steps in procedures. Trainer B adhered most closely with written procedures while Trainer D had the most variation of procedures.

The Process Observer Reports indicate a remarkable similarity in the implementation of the program, which in part can be explained by each trainer attempting to adhere as closely as possible to the suggested activities and time schedules. In general, the trainers conformed to the suggested format to a great degree, covered the major concepts as indicated by reaching criteria on the behavioral objectives, conducted class in a receptive attitude which had an open and casual atmosphere conducive to inquiry, and established a good rapport with their participants.

Problems which occurred dealt primarily with time allocations and scheduling, poor technical quality of videotapes and taping schedules.

While each trainer's style of teaching varied to some degree, the process observer reports in general reflect positive feedback in regard to their

performance.

In general, the Trainer Reports appear favorable to the training package for each component. Participants expressed interest from the onset of the program; however, the trainers commented on "natural hesitation" by the participants in Component I which diminished as the cohesion of the group developed.

Trainers were very positive about several of the dimensions within the components such as: Microteaching and critiques, group discussions, and practicing and coding with observational techniques. The trainers felt tne pre-post tests and affective inquiry behaviors were least effectively implemented.

The trainers' suggestions relative to future implementation of the training program included the following: (1) The tape quality should be improved, (2) participant feedback on pre-post tests is needed, (3) release time for trainers.

The trainer's candid comments have led to modifications in the program. We were pleased that they were much more positive than negative toward the program in general.

Participant Results. The twenty teachers who participated in the UNL/McREL Field Test exhibited striking differences in their behavioral patterns prior to instruction in the staff development program and after completing the six components in the program. As a group, they exhibited a more indirect, open, student-centered, and analysis level behavioral pattern. All twenty teachers were classified as being in the PCI (Pupil-Centered Inquiry) strategy at the end of the program, while none of them started the program using this strategy. As a group, they became more indirect in their influence pattern (.34 to .49 I/I+D Ratio) while still leading the inquiry sessions. They also increased their use of 3's and 4's and increased their type of interaction to the analysis level (from 9 percent to 42 percent Inquiry 2's). Eleven of the twenty teachers

started the program as "noninquiry" teachers; all but one teacher was using an inquiry strategy by the end of Component IV; and all of the teachers experienced PCI by the end of the program. These results show similar patterns to those found with the original developmental group of participants. Analysis of the inquiry factors (Column Three behaviors in the Revised IAS) revealed that there was increased use of inquiry 2's (analysis) Inquiry 8's (formulating problem), Inquiry 9's (assessment), Inquiry 5's (expression of feelings), and more Inquiry 6's (procedures) but fewer Inquiry 3's (hypothesizing). These data support the conclusion that the staff development program did modify teacher and student behaviors toward a more inquiry-oriented pattern of learning/teaching.

Summary of Behavioral Objectives. The data concerning objectives and planning skills revealed a general improvement in the quality of planning being exhibited at the end of Component IV. The greatest improvement came in the writing of behavioral objectives; but little integration of taxonomies, interaction analysis, inquiry structuring skills, and specific inquiry behaviors were observed.

Teacher Attitudes about the Program - Summary. The participants' attitudes generally were favorable to the entire program and seemed to be most favorable to the last two components. They expressed satisfaction with the instruction and an understanding of the material presented. They found self-analysis, micro-teaching, and group interaction to be of greatest value. Their chief criticisms were on the quality of some of the videotapes, the lack of feedback on pre and post tests, and the filling out of the opinionnaires. All groups stated that they would recommend participation in this group to others and that their trainer did an excellent job as trainer. All participants stated that their students had enjoyed and benefited from the program.

Summary of Pre-Post Test Results (Groups and Individual Teachers). The Component I Pretest revealed a high entry level (7.6 mean score out of 10 possible points) of the participants in identifying inquiry behaviors. The teachers as a group did increase slightly on the Component I Posttest (up .2) They increased their knowledge and application skills on interaction analysis (Component II) significantly (From a mean score of 4.5 to 14.4 out of 19 possible points). Component III Pre-Post Test results show an increase in the number of specific inquiry behaviors and affective areas identified, reflecting a greater understanding of the behaviors related to student-centered, inquiry-oriented instruction.

The pre-post test results from Component IV revealed increased under standing and use of behavioral objectives including the conditions and extent of the behavior to be observed. Component V pre-post test results revealed similar increases in the participants' ability to define Pupil-centered Inquiry and to give specific teacher and student behaviors related to PCI. In Component VI the increased ability of the participants to identify "openness" and "inquiry-oriented" behaviors is shown by the increase in the mean score from 15.8 to 27.8 out of 38 possible points.

On all of the pre-post test data, then, there was a growth of understanding revealed which speaks well for the training program.

Summary of Student Behaviors Results. Coding of cognitive inquiry behaviors before and after instruction in the ISD program indicated that students were much more involved in inquiry after instruction. Student talk increased from a total mean for all groups of 21.1 percent to 81.1 percent. This represents a substantial change in the amount of student involvement in the classroom. Classes in three of the four trainers' groups increased the variety of specific inquiry behaviors which were used. In all four groups the category of factual data was reduced and data analysis and interpretation were

increased with a total mean from 14.1 percent to 39.4 percent. Other specific inquiry behavior categories which increased included: "affective," "procedures." "sensory observations," "problem identification," and "assessment."

Affective coding also indicates a large increase in the participation of students. "Volunteering information" and "seeking ideas from others" were the most frequently used categories both before and after instruction, but students were predominantly using these behaviors after instruction while teachers used them before instruction. "Divergent views" expressed by students also occurred frequently after instruction. Generally, use of specific behaviors by students increased except for statements of "confidence can achieve objectives" and "states willingness to continue." While openness behaviors used by students occurred more frequently after instruction, inquiry orientation behaviors also made some increase.

Responses on student questionnaires administered at the end of Components V and VI showed positive attitudes on all items with grand mean scores ranging from 2.25 to 2.85 (3.00 or less was considered positive response) on Component V and 2.29 to 2.89 on Component VI. Students enjoyed their work, felt they learned both content and process, and generally would like to continue with inquiry. In interviews students were enthusiastic in their responses to questions regarding inquiry. They tended to prefer this learning approach and felt they accomplished as much or more than in other situations. The responses to these questions were somewhat more positive when answered by students in the developmental phase of the program.

Contributions of the ISD Program in Inquiry to the Improvement of Teacher Education

1. The Program has contributed to the process of developing competency based teacher education program through the identification, isolation and assessment of the impact of teacher behaviors on student learning outcomes.

2. The development and assessment of the ISD program has provided an opportunity for personal and professional growth for teacher educators. Fifteen educators who had experience with this program at the University of Nebraska - Lincoln are currently on the faculty of other teacher training institutions and are designing and implementing strategies based on these experiences.

3. This Program has served to change and improve the supervising process for both pre-service and in-service teachers through the use of technology and objective feedback systems.

4. The ISD program has incorporated a dimension which has been largely ignored by teacher training institutions, that of providing training for the affective domain. Teacher training strategies which provide a better understanding of and the ability to plan and design for the affective dimension are included in the program.

5. The following products or outcomes of the ISD program provide additional insight to the techniques of changing teacher behaviors and therefore are invaluable in application to teacher training programs;

   Not only does the ISD program produce changes in the direction of inquiry, but it develops generally applicable teaching skills such as reinforcing techniques, questioning, verbal influences, the use of behavioral objectives, problem solving, and the use of affective behaviors.

   An important aspect of the ISD program is that it produces teachers who have a greater awareness and ability for self-analysis and evaluation which results in modification of their own behaviors.

   This program produces teachers more capable of becoming designers of learning experiences which result in increased student involvement in and responsibility for learning.

6. While the ISD program was designed as an in-service program, it has considerable implication for the development of similar outcomes for pre-service teacher education programs as demonstrated by the inclusion of many elements of the ISD Program in the Nebraska University Secondary Teacher Education Program (NUSTEP).

ISD PERSONNEL - DEVELOPMENTAL PHASE

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*None of the personnel were full time on the project

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*None of the personnel were full time on the project

Budget

For Development of

Pilot Test and Field Test

for

Instructional Staff Development

1.	Development - Personnel and Materials	$162,147
2.	Pilot Test - Personnel	4,350
3.	Revision and Final Production of Training Manual	9,932
4.	Field Test - Personnel	25,452
		$201,881

The following items were not included in the above budget figure:

a. Salaries for personnel from McREL who contributed to the project.

b. The cost of video and audio equipment.