DOCUMENT RESUME

ED 052 160 SP 005 044

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TITLE College Teachers: A Resource for Implementing Change.
INSTITUTION Texas Univ., Austin. Research and Development Center for Teacher Education.; Texas Univ., Austin. Science Education Center.
SPONS AGENCY National Science Foundation, Washington, D.C.; Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-5-0249
PUB DATE 70
CONTRACT OEC-6-10-108
NOTE 61p.; Report Series No. 55. Final report of a Leadership Conference sponsored by the Science Education Center and R&D Center for Teacher Education

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS *Change Agents, *College Faculty, *Educational Innovation, *Leadership Training, *Teacher Education

ABSTRACT

The leadership conference described was based on the assumption that a change agent will be most effective if he has knowledge of the change desired, competence in interacting with people, and a personal commitment to implementing the change. A 1-day pre-conference session was held in April, and the 3-week conference with twelve participants was held in June. Follow-up and feedback were obtained from visits to the participants during the school year, and by a 2-day follow-up conference. Results indicated that participants did have a functional knowledge of newer curricula but did not have strategies or alternatives by which they could work with others. Participants shared a common interest in improving the profession, but their knowledge of the operation of the school district was relatively superficial. Feedback indicated that following the conference nine participants worked with the school districts. Participants provided many informal cues to indicate that they felt they were part of a total team in developing a teacher education program. Appendixes include the conference agenda, lists of staff and participants, evaluation instruments, and instructional decision tests. (MBM)

College Teachers: A Resource for Implementing Change

David P. Butts
Gene E. Hall
John J. Koran, Jr.

Report Series No. 55

The final report for a Leadership Conference sponsored by
The Science Education Center
and
The Research and Development Center for Teacher Education
The University of Texas at Austin
with support from the
National Science Foundation

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COLLEGE TEACHERS:
RESOURCE FOR IMPLEMENTING CHANGE

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Much has been said and done to improve the learning experiences of students in American schools. Large amounts of money have wisely been invested in the development and refinement of science curricula. With the developmental investment completed, program decision makers could well expect to pause and reflect on the results of their efforts.

Listen to the exciting hum of children engrossed in their pursuit of science, but don't listen too long, for what might be heard is not the sounds of delightful involvement with the new experiences of science. Rather, through the eyes and ears of such observers as Coleman, Jackson, and Silberman, what is more apparent is that schools are very similar to the established routines of schools in the 1920's.

Teachers still perceive their function as giving

information

students' function is to learn to be obedient

and

to receive the information presented.

While the explicit goal of the curriculum innovations in mathematics and science has been involvement of the students in "doing" science, reality emphasizes that programs by themselves have resulted in little or no change. People must be added to these programs for them to come alive.

Students are needed who will have a new delight in learning how to learn.

Teachers are needed who gain deep satisfaction in assisting students to grow both intellectually and as persons.

But where are these teachers to be found?

Change in students' learning experiences is facilitated through the ways that these experiences are structured. *The structure* of the learning experience in science includes both the curriculum and the teacher who uses that curriculum. The nature of the more recent curriculum innovations in science such as Science - A Process Approach, Science Curriculum Improvement Study, and the Elementary Science Study is such that their effective use requires an understanding both of the subject and the method that are built into the design of these programs. To use these programs effectively, most teachers find it necessary to modify their previous teaching procedures. Teachers can no longer teach as they have been taught. They can no longer have students copying notes in their notebooks presented from the teachers' old college notebooks. Thus, the effectiveness of the implementation of the recent curriculum innovations is directly dependent on the preparation of the teachers. But where; and how; and under what conditions is the teacher to secure this preparation?

One source of assistance is the pool of individuals who have direct contact with both the theoretically desirable and the ever present reality - the college educator. This individual has the opportunity to establish the horizons for the preservice teacher while daily attempting to cope with the reality of the classroom of the inservice teacher. This person is viewed

by both the inservice teacher and the preservice teacher as an example of

what ought to be in science teaching -

a source for new ideas -

an influence for improved curricula involvement.

OBJECTIVES OF THE CONFERENCE

In order for the conference participants to serve as effective resource persons for change in teacher education, the objectives of the conference were for each college educator to be able to

1. Describe at least two curriculum innovations such as Science - A Process Approach and the Science Curriculum Improvement Study, their rationale and psychological basis.

2. Identify and describe some of the components of a teacher education program essential for the improvement of science instruction.

3. Demonstrate competence in the use of a teacher education program with inservice and preservice teachers.

4. Identify and demonstrate skills in assessing the impact of a teacher education program with teacher and student populations.

5. Construct alternative solutions for anticipated problems in conducting teacher education programs.

The plan of the conference was based on the assumption that a change agent will be most effective if he has first, a knowledge of the change desired; second, a competence in interacting with people in a way consistent with the philosophy and intent of the change; and third, a personal commitment to implementing the change.

One essential ingredient for the college educator's experience was a planned program for teacher education which involves the participants in

learning how to learn. Rather than lecturing on how to involve children in the heuristics of discovery, the teacher education program should itself present a model of instruction. Such a sequence has been developed at the Science Education Center of The University of Texas in cooperation with the Research and Development Center for Teacher Education. The program consists of a set of instructional modules designed to "set the stage" for inservice or preservice teachers as they plan to teach curricula as Science - A Process Approach, Science Curriculum Improvement Study, or Elementary Science Study. Each instructional module includes a pre- and post appraisal, specified behavioral objectives for the instructional sequence, and detailed descriptions of how the instructional activities can be conducted. A total of 13 instructional modules were available for the participants which represent about 70% of a meaningful program for teachers of science. The sequence of modules does provide for a portion of the preservice or inservice program to be structured to meet local conditions or needs.

As part of the commitment in participating in this conference, the college educator agreed to utilize these instructional modules with at least three groups of teachers during the coming year. As they utilized these modules, they also agreed to provide detailed feedback on the module including pre- and post appraisal data from their students.

THE CONFERENCE IN ACTION

A. General Plan of the Conference

Throughout the activities of the conference, the college educator was first involved in demonstrating his own competence with each skill. Then

he practiced introducing this skill to a group of teachers which was followed by supervising these teachers as they worked with small groups of children. Feedback from each of these three levels of experience was used to sharpen the college educator's competence in interacting with teachers. Continued supportive feedback during the activity of the year also resulted in a continued development of the college educator's ability to identify and resolve resistance to change.

B. Pre-Conference Involvement

In April, a one day pre-conference session was held in Austin. During this day's activities, the participants had the opportunity to describe their individual needs or interests, to become acquainted with the other members of the conference, and to establish a priority list for the experiences of the conference. It was apparent during this day that these college educators were concerned about the resources which were needed by schools but which were presently not available. As individuals, they were interested in serving as a resource but felt that they lacked the skills in initiating or maintaining interaction with schools. They "knew" about some of the more recently developed curricula in science for the elementary school, but expressed high concern for appropriate procedures by which to involve preservice and inservice teachers with these curricula. Lectures on the excitement of children "messing around" seemed to be inappropriate, but what alternatives were there? As an information device, the pre-conference also served as a source of information about housing, calendar, reimbursement, etc., that related to the summer conference.

C. Conference

In June, the twelve conference participants returned to Austin for a three-week conference. A pervasive theme that characterizes these three weeks was

> I feel positive toward that which I know -- I am apprehensive about that which is unknown.

These three weeks were devoted mainly to providing knowledge through experience. During this time, the participants

1) Served as learners in specific modules intended for teacher education programs.

2) Served as instructors for undergraduate methods course in which they practiced using specific parts of the teacher education program.

3) Functioned as feedback sources for their partners during these practice sessions with undergraduate students.

4) Supervised the undergraduate students as they went to a school and taught small groups of children, an experience which allowed them to quickly observe the results (or lack of results!) of their earlier work with the undergraduates.

5) Participated in teaching small groups of children, a low ratio teaching situation which the participants renamed "Low Calorie Teaching." Based on their taped recordings of this session, they then participated in the Analysis of Teaching Behavior module. Through this experience, they were confronted with their own style of teaching, its monotonousness, and the need for more variety.

6) Were involved in a series of activities based on supervisory strategies that were designed to give them a more specific focus on this important aspect of implementing change.

7) Provided a number of topics for discussion which were of high interest to the group such as

   "What do school science supervisors expect from their teachers?"
   "How do we as college educators become involved with the schools?"

"How can we as college educators initiate change on our own campuses?"

"In a competency-based teacher education program, where achievement is the constant and time is the variable, how do you give grades?"

"How can we secure the help we need from the conference staff during this next year?"

"How can we help schools implement change when they have state adopted test books? Can these be adapted?"

For each of these subjects, special seminars were organized and were handled either by the conference staff or by resource personnel who were locally available.

8) Participated in a series of scheduled seminars which were requested during the April pre-session.

A. Seminar on "Individualization of Instruction" by Dr. Edwin Kurtz.

B. Seminar on "Social and Psychological Considerations for the Change Agent" by Dr. Richard Ford.

C. Seminar on "The Organization and the Functioning of a College-Based Science Education Center" by Dr. Addison E. Lee.

D. Seminar on "The Resources and Opportunities in the University of Texas Research and Development Center for Teacher Education" by Dr. Oliver Bown.

E. Seminar on "The Philosophical Base and Rationale for the Teacher Education Program, The Educational Encounter" by the conference staff.

F. Seminar on "The Integrated Information Units of AAAS, SCIS, and ESS" from the Far West Regional Laboratory.

D. Follow-Up and Feedback to Participants

During the school year, each participant was scheduled to be visited twice. Before leaving, the participants suggested that they would find one visit useful but would prefer to have in lieu of the second visit a joint meeting of all the participants. Permission for this change in the

contract was secured from officials of the National Science Foundation. Eleven of the twelve participants were visited during the year. At the time of these visits, there was opportunity for the conference staff to observe the participating college educator work with groups of teachers. In many cases, there was also time for the conference staff to work with groups of teachers. Other time was scheduled for the conference staff to meet with members of the administrative staff in the participating institution and to discuss the general rationale of the program. The shared feedback and experience in serving as a change agent both on the campus and on the local community was a supporting experience.

As the participants completed modules, each of them sent feedback forms and pre- or post appraisal data to the Research and Development Center for Teacher Education. Table 1 summarizes the number of times in which these were received. It should be noted that changes in teaching assignments of three of the participants made it not possible for them to work with either preservice or inservice teachers in science. Hence, feedback forms were not received.

In addition to module feedback and appraisal data, several of the participants assisted in the data collection for a research study under the direction of R. Scott Irwin. (See Appendix D for an abstract of this study.)

As relevant feedback and suggestions were received, a sometimes periodical news sheet was circulated. The KEG ("College Educators' Gazette") served as a communication device for the group.

TABLE 1
Participant Feedback

Participant / Module Title	Bennett	Brim	Crowder	Devito	Fingal	Gage	Grunau	Lamb	Moore	Payne	Pratt	Spreadbury	TOTAL
1. Observing, the Basis of Science	4		1	1		1	1	1		1	4		14
2. Describing Observations	3		1	1		1		1		1	1		9
3. Comparing Observations	4		1	1				1		1	1		9
4. Reasoning About Observations	3			1		1		1		1	1		8
5. Describing Events			1					1					2
6. Organizing to Investigate	1			1				1		1			4
7. Formulating Hypotheses	1									1			2
8. Meaning of Data	1			1				1					3
9. Analysis of Teaching Behavior	2		1	1		1		1		1			7
10. Stating Instructional Objectives	5		1	1		1		1					9
11. Observation Classification Questions	1					1	1						3
12. Performance Tasks						1	1						3
TOTAL	24	-	6	8	-	7	2	9	-	7	7		

E Spring Follow-Up Conference

In the spring, a two day conference was scheduled in Cincinnati, Ohio, prior to the NSTA Convention. During this time, each participant was asked to identify the things that he felt that he had done better during the past year as a possible result of participation in the conference. A second question was asked of each participant regrading what he was not able to do. With regard to the second question, the participants' comments focused on the lack of time to handle all of the concerns they had about science teaching. Related to the things that they felt that they had done better this past year, their comments centered on two ideas.

First, the transfer or the function of the usefulness of science teaching ideas was apparent.

> The science process modules when used with inservice teachers went very well. The teachers used the ideas the following day in their classrooms. A reading teacher used the "Cubes" (Observing, the Basis of Science) as reading readiness in her classes. One child in the fourth grade had 43 observations about a piece of construction paper. When preservice teachers listed 5, they were thinking that to list six was really too much!
>
> It was successful in "turning on" students in science and rewarding to see the deliberate attempts of preservice teachers to involve children. For the first time, preservice teachers were asking to teach science as their first student teaching assignment.

A second point of emphasis was the greater insight into the needs of the preservice teachers by the professors. This was indicated by such comments as

> Having and using a diagnostic test was an eye opener and most helpful.

> I had a feeling of less "shotgun" to what I was doing. The collection of behaviors made it possible for me to do a laboratory practicum for a final exam, plus it provided high motivational activities for students and a practical model for the instructor.
>
> Analysis of Teaching Behavior module works beautifully. It was liked best by the students.
>
> I found that most of my students could not do the task at the beginning of instruction. In fact, about half of them could only do one-tenth of the items successfully on the pretest. I certainly know more about my students.

Another suggested that he was more successful in changing from traditional lectures. In fact, he noted that

> Preservice teachers didn't like this approach. It doesn't have enough in it that is like the traditional. They were apprehensive about the lack of lecture from the professor. They were uncomfortable when they were expected to take the responsibility for learning.

As an outside observer, Dr. David Stronk of The University of Texas summarized the two-day conference as follows:

> My observations at the meeting of participants from the Leadership Conference have led to three conclusions: (1) There was a great variety in both the types of professors and the types of students involved in the program. (2) There was great diversity in the use of the modules and therefore the evaluation of the modules. (3) The experience of using the modules during the year 1969-1970 will greatly help the professors to improve their use of these modules in future years.
>
> The professors who participated in the Leadership Conference represent a broad spectrum of backgrounds ranging from first-year teachers to highly experienced older professors. Their students who used the modules had a range from immature preservice young women of weak scientific preparation to highly experienced inservice teachers with relatively strong preparations in the sciences. The modules seemed most helpful when used by beginning professors and by students with weak preparation.
>
> There was great diversity in the use of the modules. Some professors developed their entire course through the modules. Others used the modules as supplementary materials. The amount of time required to present a module and the amount of time required by students to complete a module varied extremely. One

professor observed that his inservice teachers needed twice as much time as his preservice students. But another professor had the opposite experience where his inservice teachers needed only half as much time. The students evaluated the modules as ranging from too easy to too difficult. This evaluation seemed to be based on the subjective attitudes of the students toward the entire group of modules, rather than a systematic analysis of the content of each module.

The professors seemed to indicate some confusion on the best use of the modules. Their detailed comments promised that in future years there would be an improved use based on their experiences. One professor asked for the development of modules on each of the following four topics: existing texts, how to teach a topic, evaluation, and analysis of texts. Others felt that they had neglected the arts of questioning and creativity. Several professors observed that preservice teachers felt insecure with the modules because they were rigidly accustomed to more traditional modes of teaching. They disliked the responsibility and freedom provided by self-paced materials. Probably these future teachers need the modules especially to expose them to new methods of teaching and to seek creative ways of meeting the individual needs of their students.

When asked to list things which they were able to do during this year that they felt better about than their activities of the previous year, the professors emphasized the value of microteaching, teaching in a more orderly way, measurement of skills, and motivation toward thinking skills. In naming things which they neglected but will do next year, the professors noted the need for more performance task evaluation, more realistic allotment of time, and provision of over-views. The professors also responded to the question: "Name two things that you didn't do this year that you would have done had you not been a participant in this cooperative project." They had omitted many practical activities, e.g., cork boring, glass bending, making bulletin-board displays, analysis of various texts, demonstrations of scientific experiments, etc.

The meeting closed with a discussion of the fundamental needs of future teachers. Science is changing rapidly and requires frequent retraining of the teachers. Because teachers tend to teach in the same way in which they were taught, they need courses which will encourage them to creativity and flexibility. Students should be encouraged to work independently of their teachers.

At the spring follow-up conference, the self-paced version of the teacher education materials were presented. Those who were interested in using these materials were encouraged to do so. Subsequent reports and visits suggested that more than half of the participants did. Their reactions

ranged from extreme discomfort at being displaced as the central figure in the teaching-learning situation in the college classroom to complete satisfaction as was indicated by one who stated

> Once again we enjoyed your visit. Enclosed is the feedback. Approximately 210 students were taught the modules. Some were secondary science majors (about 30). I taught the modules in some other classes other than science to illustrate particular points. Generally, student and teacher interest was high. Relatively few "rough" spots. I have just completed the self-paced version with two classes. My initial evalustion is A+! I really think it is the best thing that I've tried with the science group. Student reaction was excellent - especially from the graduate students.

F. Summary

The planning of the Leadership Conference was based on the assumption that college educators could provide a needed source of leadership if they

1) Possessed the necessary knowledge of the change desired;

2) Demonstrated a competence needed for interacting with others in ways consistent with the rationale of the change desired; and

3) Had a personal commitment to implement the desired change.

The results of the conference rather clearly indicate that many of the participants did have a functional knowledge of newer curricula. They did not have strategies or alternatives by which they could work with others. When presented with opportunities to become involved with a collection of such alternatives as illustrated in the R & D modules, most of the participants enthusiastically became agents for change. In their back-home situation, their area of influence quickly spread from the college classroom to neighboring school districts. Knowledge of, practice with, and commitment to implementing change has been a productive model for their personal development.

CONFERENCE EVALUATION

Two types of evaluation were made: first, the identification of selected characteristics of the participants, and second, the assessment of change in participants' behavior.

A. Selected Characteristics of Conference Participants

The invitation to participate in this Leadership Conference was extended to those individuals for whom there was some indication that they were interested in serving as a resource person in implementing curriculum change. Willingness to accept such a challenge was indicated by the fact that even though the invitation was made very late in the spring semester (early April), twelve of the first fourteen individuals contacted were able to arrange their schedules to participate.

Although they shared the common concern, their individual differences were such that they also represented a ready opportunity to examine other characteristics that might be relevant to selection of potential change agents was possible.

1. Education

   Ten of the twelve participants had earned doctorates prior to the conference. One was awarded his doctorate during the conference, and the other was currently working on his doctorate at Michigan State University.

2. Experience

   Teaching and professional experience was thought to be an important factor in serving as a change agent. This is especially

true if the experience is related to the level of change desired.

Of the participants

8 had taught in the elementary school an average of 2½ years
(Range one to four years)
11 had taught in the junior high school an average of 3 years
(Range one to four years)
8 had taught in the senior high school an average of 4½ years
(Range one to eleven years)
12 had taught in college an average of 4½ years
(Range one to twelve years)
6 had worked in industry an average of 3 years
(Range one to seven years)

The participants were relatively recent additions to college staffs, as was indicated by the time that they had been in their present positions, which was an average of a little more than two years with a range of one to six years.

3. Home Institution and Responsibilities

There was a variety in the descriptions of the colleges from which the participants were selected.

a. There was a wide range in student body size.

2 individuals were from colleges of less than 1,000 students
7 were from colleges of from 2,000 to 10,000 students
3 were from colleges in excess of 10,000 students

b. Of the colleges represented by the participants, 75% were state supported and 25% were private colleges.

c. More than two-thirds of the institutions had more than 5,000 students in their graduating class.

d. The educational level and expectancies of the faculty illustrated a fairly similar pattern.

Two-thirds of the institutions had between 50% and 75% of their total faculty with doctorates.

Although 42% of the institutions had more than 90% of their education college faculty with doctorate degrees, there was a range from less than 50% to more than 90%.

45% of the institutions had an average full time teaching load of ten to twelve hours.

All of the participants expected to conduct inservice activities in addition to their regular college teaching responsibilities. Most of the participants had a 100% teaching load with only one reporting 25% release for research.

e. There was a wide range of commitment to teacher education and to education in the teaching of science in the institutions.

None of the students represented had less than 10% of their graduating class being certified as elementary teachers.

In 33% of the schools, certified elementary teachers represented more than 30% of their graduating class.

Based on the participants' reports, 67% of the schools had more than 200 students entering elementary education programs each year. There was a range from less than 50 to more than 500.

In 75% of the institutions, the Department of Education was responsible for advising elementary education majors.

In 53% of the institutions, science teaching training for elementary education majors was taught by the science department faculty.

4. Professional Affiliation

The participants belonged to an average of three professional organizations with a range from one to six. Of these organizations, 6 were at the state level and 13 were national. The most frequently mentioned organizations were

National Science Teachers Association - 6
American Association for the Advancement of Science - 4
National Association for Research in Science Teaching - 4
Texas Science Teachers Association - 4

5. Leadership Opportunities

When asked about the characteristics of the school districts in which they might be involved with inservice teachers, the participants reported that:

60% of the districts had student populations of less than 5,000.
67% of the districts had a student-teacher ratio of 1:20-30.
In 67% of the districts, 80% of the elementary teachers had bachelors degrees.
Almost half of the participants did not know the percentage of elementary teachers who had masters degrees in their district.
53% of the districts had an average of 400-600 students in each elementary school.
60% of the districts had between 1 and 10 elementary schools.
93% of the participants did not know their district's per pupil per year expenditure for science.
40% of the participants did not know the ratio of supervisors, coordinators, or other resource people to elementary teachers in their district.
42% of the districts had regularly scheduled inservice time in the range of 13-30 hours.
60% of the districts had predominantly middle-class student populations.
In 53% of the districts, the median age for elementary teachers was 31-40 years.
34% of the districts had between 6-10 years as the median number of years of teaching experience.
73% of the participants had had more than 6 contacts with these districts.

6. Summary

Although the participants came from institutions that varied in both size and commitment to teacher education, they did share a common interest in improving the profession as indicated by their teaching responsibility, membership in professional organizations, and contact with school districts. Most of the school districts

were relatively small in size and consisted of relatively stable teacher populations. Although they had had a number of contacts with the school districts, their knowledge of the operation of the school district was relatively superficial. The contact that the participants had had with school districts would indicate that the door was opened for their being a change agent although they did not have a history of serving as such within school districts. Feedback from the participants did indicate, however, that following the conference, nine of the twelve did work with school districts during the 1969-1970 school year.

B. Assessment of Changed Behavior of College Educators

A second dimension of the evaluation consisted of assessing change in participants' behavior related to the five objectives. To evaluate the conference, objective tests and a summary feedback form were used. See Appendix D for copies of both the instruments and the feedback form.

1. The first objective of the conference was that the participants be able to describe at least two curriculum innovations such as Science - A Process Approach and Science Curriculum Improvement Study, their rationale and psychological bases. Activities related to these objectives were

   a. Low ratio teaching with the Science - A Process Approach exercise "Measuring Forces with Springs."

   b. Low ratio teaching with the Science - A Process Approach exercise "Inference Boards."

c. The Integrated Information Units from the Far West Regional Laboratory.

Table 2 illustrates the evaluation of these activities by the participants.

Related to the low ratio teaching experience with "Measuring Forces with Springs," one participant said

> It was good, but I was not as successful as I was later.

Another viewed it very highly as

> It was personal involvement and showed me what I can do. It also gave me an opportunity to test my own ability to use newly acquired competencies.

Other comments regarding the second low ratio teaching session with the "Inference Boards" were

> A very enjoyable experience.
>
> Somewhat useful. It gave me an opportunity to try some modifications of skills which I gained from my Analysis of Teaching Behavior experience.

In general, the Integrated Information Units were not perceived as useful or desirable. This was illustrated in such comments as

> I do not have a basis for being as critical of these as everyone else.
>
> They were not at all accurate in their report of Science - A Process Approach and the Elementary Science Study.

Others found them quite useful, with comments indicating

> Good stuff. I would definitely use them!

2. The second objective of the conference was for the participants to be able to identify and describe some of the components of the teacher education program. To assist the participants in this task, the following sessions with modules were scheduled:

TABLE 2

Participants' Evaluations of Activities
Related to First Objective

Activity	Rank 1 = most important 27 = least important	Rating 1 = strong 61 = weak
1. Teaching experience with Science - A Process Approach exercise "Measuring Forces with Springs"	9	22
2. Teaching experience with Science - A Process Approach exercise "Inference Boards"	13	19
3. Integrated Information Units from Far West Laboratory	24	36

1. Observing, the Basis of Science
2. Describing Observations
3. Describing Events
4. Organizing to Investigate
5. Meaning of Data
6. Analysis of Teaching Behavior
7. Observation Classification Questioning Behavior
8. Performance Tasks

Table 3 illustrates the evaluation of these sessions by the participants. Reviewing their comments regarding this module, the Analysis of Teaching Behavior module was consistently perceived as the highest point of the conference.

> A most valuable set of materials.
>
> New to me.
>
> Directly useful.

Other "process" type modules were viewed as

> Very important. Good activities.
>
> Not too much content. Should be easy to teach.
>
> Well taught lesson.
>
> (With respect to Meaning of Data module) I still need some more work in this area.

Following the use of the modules with groups of inservice and preservice teachers during the year, participants made these comments which indicated a more realistic view of the components of a program.

> Time estimates for teaching parts of the program were unrealistic to me. I constantly felt the pressure of time and as a result tended to avoid some discussion that I think would have been both interesting and valuable.
>
> Took much longer to cover activities than anticipated.
>
> Activities 1 and 4 seem to generate less interest than Activities 2 and 3.

TABLE 3

Participants' Evaluations of Activities
Related to Second Objective

Module Activities	Rank 1 = most important 27 = least important	Rating 1 = strong 61 = weak
1. Observing, the Basis of Science	6	11
2. Describing Observations	3	10
3. Describing Events	5	16
4. Organizing to Investigate	7	13
5. Meaning of Data	8	20
6. Performance Tasks	4	11
7. Analysis of Teaching Behavior	1	9
8. Observation Classification Questioning Behavior	15	24

Some students became bored by the activity by the time it was over.

Classification system gave some trouble. I had to teach it twice for some students.

3. The third objective of the conference was for the participant to demonstrate competence in the use of a teacher education program with inservice and preservice teachers. Several activities were designed to assist members of the conference with this goal.

    1. Preparation and conducting of the first micro-teaching session of a module with undergraduate students.

    2. Supervision of micro-teaching experience of undergraduates with children in a school in which the children were involved in experiences related to the micro-taught teacher education session.

    3. Micro-teaching a performance task with undergraduates.

    4. Micro-teaching of the Observation Classification Questioning Behavior module.

Table 4 illustrates the evaluation of these sessions by the participants. Their comments give further insight as to how they felt about the micro-teaching experience. Some felt positive

It was quite motivating and I wanted the experience.

Near the best. Real contact with people.

Performance Task module is very relevant and a good outline for a rather difficult and complex area.

I would like to see more done with this type of module.

Observation Classification Questioning Behavior module is excellent and specific.

Micro-teaching was good involvement with good direction from the module.

TABLE 4

Participants' Evaluations of Activities
Related to Third Objective

Activity	Rank 1 = most important 27 = least important	Rating 1 = strong 61 = weak
Micro-Teaching Sessions		
1. Comparing Observations module	18	22
2. Performance Task module	10	21
3. Observation Classification Questioning Behavior module	13	21

thers had reservations.

> I felt micro-teaching session left too many questions unanswered.
>
> Not outstanding.
>
> Observation Classification Questioning Behavior is not too valuable as is. Here, with some polish and a videotape properly cued it would be very useful.

Comments from the participants who used the modules during the year indicated further insights into these as components of a teacher education program. With respect to the Performance Task module

> Perhaps more specific activities could be provided. This is such an all-encompassing module that it is difficult to make it meaningful.
>
> This module could serve as a basis for an entire semester of a science methods course or virtually any other related methods course or during student teaching.

Related to the Observation Classification Questioning Behavior module, they said

> Students weren't very interested in this module so it was dropped after the pre-appraisal.
>
> Seems somewhat vague and unconnected in places to some participants.
>
> Most participants were unable to perform final appraisal.

Another type of activity was a measurement of the participants' instructional decision behavior pre and post to the conference. Out of a total score of 62, the pre-conference mean was 46 and the post-conference mean was 52.1. As illustrated in Table 5, only one participant showed a negative gain, and he started from a very fine pre-test score. Two participants showed complete stability in their performance and each showed a gain from

TABLE 5

Pre-Post Test Performance
on the Instructional Decisions Test

Participant	Pretest Score	Post Test Score	Amount of Change
A	22	61	+39
B	23	38	+15
C	33	38	+29
D	35	46	+11
E	36	55	+19
F	41	52	+11
G	43	43	No change
H	51	52	+ 1
I	53	61	+ 8
J	55	55	No change
K	55	48	- 7
TOTAL MEAN	40.7	52.1	+11.5

1-39 points. In general, post-conference test performance indicated that the participants had achieved a very desirable level of competence with respect to the third objective.

4. The conference's fourth objective was that the participants be able to identify and describe skills in assessing impact of a teacher education program with teacher and student populations. Opportunities related to this were

   a. Constructing matrix after the Analysis of Teaching Behavior module.

   b. Supervision of micro-teaching at Casis Elementary School.

As previously mentioned, the Analysis of Teaching Behavior module was ranked as the most useful experience of the conference. After the year's work with the teacher education program, it was still perceived as being the most useful way of helping preservice or inservice teachers. Such comments as these were made in the feedback from the Analysis of Teaching Behavior module at the end of the year.

> Excellent projection. The entire activity went very well. The students provided topics, recording machines and located the children. The only problem is the variety of topics and speeds and the time to listen to all of these.
>
> The students loved this. They felt 'on stage' and they all immediately played back their recorded session.
>
> The objective was slightly changed to allow direct teacher information because of limited background of the students.
>
> More needed on the interpretation of the scores I-D, i-d, and S-T so that they know what the numbers indicate.
>
> More direct teaching to build a foundation. Then one could use an indirect method. (In this case, time was a big factor and direct approach to the job faster with a good response from the students.)

Students seem to enjoy this module very much. They expressed interest because of the value it has for them and their teaching.

One 'sweet young thing' after listening to her first low ratio tape exclaimed, 'If you had told me that I had said O.K. 37 times, I would have said that you were nuts!'

I could also hear myself 'chomping' my gum! Never again!

The students rated this module as most helpful of all modules. It was also very interesting to see the amount of change in the type of teacher talk between the first low ratio teaching session and the second low ratio teaching session.

The timing was the hardest part for the participants to perform.

It was difficult because of the lack of familiarity with the instrument. College people display an alarming amount of ignorance or I don't teach as efficiently as I think I do.

Another indication of concern of the participants about the impact of their teacher education program is illustrated in some selected comments that they provided on the feedback forms as a result of their back-home experiences.

(Related to Comparing Observations module) More building of concepts needed on weight, mass, volume, metric and cubic system.

The pretest and post test didn't communicate because of wording. Therefore, they remarked, "I learned more than this thing shows!"

The October issue of The Instructor arrived during this module. Three objectives were listed on the cover for the reader. All of these were poorly stated and this was noted. Another student discovered that she was picking up proficiency in seeing behavioral objectives elsewhere. Another realized that the nine action verbs were used in all disciplines rather than in science only.

The pre-appraisal showed that participants could not write behavioral objectives.

5. The fifth objective of the conference was for the participants to be able to construct alternative solutions for anticipated problems in conducting teacher education programs. To assist participants, two consultants were invited to discuss the task of individualizing instruction (Dr. Edwin Kurtz) and the role of change agents (Dr. Richard Ford). As is true for any learning situation, the relevance of the sessions to the individuals concerned is reflected in the participants' rating. Although Dr. Ford presented many useful ideas, Dr. Kurtz's session was consistently ranked higher (11) and more useful (52). Many participants viewed the Kurtz model as much more closely related and functional in their back-home situation and the ideas about change agents.

Back home, the participants did go to work on alternative settings and many dozen suggestions could be quoted. The following three are illustrative only.

> It may help students become familiar with procedures if they were given a copy of the rationale at the beginning of each module. They could sense the direction in which the instructional activities are leading them if they had more foundation material. The rationale is good and appropriate to the instructional activities given.
>
> Instructional activities were good and appropriate but time-consuming. The sealed boxes do not work well. I prefer to have students construct their own moving parts.
>
> Possibly more information could be given and understood if there weren't quite as many teacher questions.

In retrospect, the participants described their feelings about the conference as positive. Rapport of the twelve "disciples" who "partook" of the different varieties of fresh fruit at the coffee breaks each day was high. Some of the comments about the conference in retrospect were

> I appreciate the tremendous amount of planning and detail work that went into this conference. I suspect it will be a very potent force in altering teaching behaviors of the participants. I'm very pleased.
>
> I would like to see more of this type porgram offered to more people. The program was planned well and had depth. I predict that your feedback in the fall and spring will be most acceptable.
>
> This conference has strengthened my belief that there is joy in the search for knowledge, and there is excitement in learning about the physical and biological world; also, there is intellectual power in the way scientists ask questions and seek answers to their questions.
> I also learned that when one teaches by the process approach, he will attempt to present the phenomenon or the situation first to the students and then involve them personally to observe, communicate, measure, infer, etc., which will help them as they attempt to investigate a problem. (The teacher should be present to guide them).
> On the whole, the conference was very educative and stimulating; although the schedule was a little tight, especially so that it entailed much moving around.
>
> This will not be feedback, but I think all of you have done an excellent job. I realize that a conference such as this cannot be everything to everyone, and, therefore, some activities were more relevant than others to me. However, all things considered, I have profited (actually gained or achieved) the expectancies that I had before the conference. Now, I am anxious to get back and try these things out and reflect on what we have done here this summer.
>
> I know you said that this type of information is of little value, but it was the most educational three weeks I have ever spent. Whether there is a future conference or not, I still hope to be able to review the modules as they are made available. This technique cannot help but improve teaching at the university level!

> I feel that this is a useful set of modules especially for the younger and/or beginning methods teacher. Methods courses I think require a great deal of insight and/or experience at several levels before they can be properly taught. The workshop in general helped (broadly) to give such "insight" as well as appropriate college teacher behavior.

- Assessment of Changed Behavior of College Educators' Students

Data on this question were taken from two sources. First, the pre-post appraisal data on the preservice and inservice teachers' performances were collected from the participants during the school year. Selected samples of pre-post teaching behavior from the low ratio teaching sessions which occurred prior and after the Analysis of Teaching Behavior module were also collected. Table 6 illustrates a change in the behavior observed for the objectives of the teacher education program on the part of the preservice or inservice teachers. The results of the study of the teaching behavior of the preservice or inservice students of the participants indicated that there was a positive change in teaching behavior on the part of both inservice and preservice teachers. (See Appendix E for a full report of this study.)

A LOOK AHEAD

If a rich, rewarding, and exhausting experience is difficult to evaluate, it is even more difficult to analyze for what might be appropriate changes in the future. Although it was not a frequently mentioned item, the pace of the conference might have benefited from more flexibility. As the conference proceeded, it was obvious that the participants were much more interested in and concerned about the components of a teacher education

TABLE 6

Pre- and Post Appraisal Performance
of the Teacher Education Program Competencies

Module	Number Successful on Pretest	Number Successful on Post Test	N
Observing, the Basis of Science module			
1	20	110	214
2	87	157	214
Describing Observations module			
3	35	120	151
4	53	131	151
5	58	124	151
6	20	105	151
7	73	137	151
Comparing Observations			
8	54	46	92
9	44	80	108
10	51	84	108
11	53	77	101
12	19	64	108
13	54	67	92
Reasoning About Observations			
14	2	65	82
15	29	57	82
16	23	51	82
17	14	49	82
18	17	49	82
19	12	12	82
Describing Events			
20	14	51	53
21	4	44	53
22	5	41	53
23	2	39	53
Organizing to Investigate			
24	0	9	9
25	7	4	9
26	3	7	9
Meaning of Data			
27	31	31	31
28	1	24	31
29	2	30	31
30	14	27	31
Formulating Hypotheses			
31	3	9	15
32	4	13	15
33	2	12	15
34	14	7	15
35	3	5	15
Stating Instructional Objectives			
36	29	103	127
37	31	49	127
	57	94	127
	94	90	127

program than they were for a rationale or philosophical session on how these components fit together. The latter type of questions were part of the follow-up conference concerns of the participants. For this reason, several sessions devoted to institutional organizations, situations, and philosophical background should be omitted from the conference agenda until asked for by the participants. This would provide time for more opportunity to work with inservice teachers and with children.

Although the content and pace of a leadership conference is important to its participants, a third item is relevant. Participants provided many informal cues to indicate that they felt that they were part of a total team in developing a teacher education program -- they were not just recipients of a "canned" package. In involving college educators (might this also be true for classroom teachers?) in a project for implementing change, it may be essential that the conference activities be presented as "first words" not "last words." In this way, we will be heeding the advice of Gibran who said

> If you are indeed wise you do not lead others to the house of your wisdom; but rather, you lead them to the threshold of their own mind.

Appendix A

2-27	Monday	Tuesday	Wednesday	Thursday	Friday
9:30	(Sutton Hall 210) Welcome to Conference Greetings Norman Hackerman President, The Univ. of Texas at Austin	(Casis Elementary) Low Ratio Teaching with Children Dave (9:30-9:15)	(Bryker Woods) Describing Events Dave		(Casis Elementary Low Ratio Teaching with Children Dave 9:30 - The Total Encounter
10:00	Informal Discussion with Coffee	Break - Travel	Coffee	Coffee	(Bryker Woods) Construct Matrices and Discuss Change Gene
10:30	Observing, the Basis of Science Dave	(Bryker Woods) Analysis of Teaching Behavior Gene	(Parlin Hall 103) Micro-teaching with Ed.C. 370 Students Comparing Observations John	(Casis Elementary Micro-teaching Ed.C. 370 John	
12:00	Lunch	Lunch	Lunch	Lunch	Lunch
1:00	Small Group Discussion Dave, Gene, John	(Bryker Woods) Comparing Observations Dave	(Bryker Woods) Analysis of Teaching Behavior Gene	(Bryker Woods) Analysis of Teaching Behavior	(Bryker Woods) Performance Task Module John
2:30	(Bryker Woods) Describing Observations Dave		Post Module Critique John, Gene	Low Ratio Teaching Preparation Gene	Critique of the Week - A Look Ahead Dave, Gene, John
3:30	Preparation for Low Ratio Teaching Gene	Preparation for Microteaching Comparing Observations John			

June 30-
July 4

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	(Bryker Woods) Organizing to Investigate Dave	Integrated Information Units from the Far West Regional Laboratory 9:00 AAAS Lesson	(Sutton 210) Research & Development at The University of Texas Dave	(Sutton 210) Research & Development at The University of Texas	(Bryker Woods) The Educational Encounter and Its Application to Science Methods Course Dave, John, Gene
10:00	(Parlin Hall 103) Micro-teaching of Performance Tasks Ed.C. 370 John	(Casis Elementary) Performance Tasks Supervision with Ed.C. 370 Students John 11:00 Consultant Miss Symmie Gough "What Do I Look for in Teachers?"	(Parlin Hall 103) Micro-teaching Observation - Classification module Ed.C. 370 John	(Casis Elementary) Supervision of Observation - Classification module Ed.C. 370 John	
12:00	Lunch	Lunch	Lunch	Lunch	Lunch
1:00	(Bryker Woods) Meaning of Data Gene	(Bryker Woods) Observation - Classification John	(Bryker Woods) Discuss Supervision of Micro-teaching John	(Bryker Woods) Formulating Hypotheses Gene	
2:00		Decision Making Gene	Back Home Concerns Logistics Dave, John, Gene		
5:30				5:30 Evening Session	

	Monday	Tuesday	Wednesday	Thursday	Friday
8:30	(Bryker Woods) Individualization of Instruction at the College Level Dr. E. Kurtz	(Bryker Woods) Individualization of Instruction at the College Level Dr. E. Kurtz	(Bryker Woods) Social and Psychological Considerations for the Change Agent Dr. Richard Ford	(Bryker Woods) Response Ability in Planning Change Strategies Dr. Richard Ford	(Casis Elementary) Low Ratio Teaching with Children Dave
12:00	Lunch	Lunch	Lunch	Lunch	(The Chariot Inn) Food 'n Feedback Dave, Gene, John
1:00	(Bryker Woods) Continuation of Discussion Dr. E. Kurtz	TGIT	(Bryker Woods) "Self-Awareness in Communication" Dr. Richard Ford	(Bryker Woods) The Year Ahead Dave, Gene, John	
2:00				Small Group Discussion Dave, Gene, John	Adjourn
7:30	Kurtzonian Applications				

Appendix B

CONFERENCE STAFF

Conference Director:	Dr. David P. Butts Science Education Center
Conference Associates:	Dr. Gene E. Hall Dr. John J. Koran, Jr. Science Education Center
Conference Assistants:	Mrs. Shirley Hord The Research and Development Center for Teacher Education
	Dr. R. Scott Irwin Science Education Center
Conference Consultants:	Dr. Addison E. Lee Director, Science Education Center
	Dr. Oliver Bown Director, The Research and Development Center for Teacher Education
	Dr. Edwin Kurtz Chairman, Department of Biology Kansas State Teachers College
	Dr. Richard Ford Richard Ford Associates, Inc.
	Miss Symmie Gough Science Supervisor Austin Independent School District

Appendix C

LIST OF PARTICIPANTS

College Educations Work Conference
Austin, Texas

June 23 - July 11, 1969

Lloyd Bennett	Texas Woman's University Denton, Texas 76204
Burt J. Brim	Department of Education West Texas State College Canyon, Texas 79015
Alex Crowder	School of Education Texas Technological University Lubbock, Texas 79409
Alfred De Vito	Department of Education Purdue University Lafayette, Indiana 47907
Bill Fingal	Mississippi Valley State College Itta Bena, Mississippi 38941
Jim Gage	Fort Lewis College Durango, Colorado 81301
Hal Grunau	Science and Mathematics Teaching Center Michigan State University East Lansing, Michigan 48823
Charles Lamb	Sul Ross State College Box 6085 Alpine, Texas 79830
Joe Moore	Department of Education Southwest Texas State College San Marcos, Texas 78666
William Payne	Department of Education Stephen F. Austin State University Nacogdoches, Texas 75961
Gerald Pratt	Austin College Sherman, Texas 75090
Wendall Spreadbury	Department of Education Stephen F. Austin State University Nacogdoches, Texas 75961

Appendix D

OPERATION BLAST

We need your help in thinking back over this conference. The following is a list of the sessions in this conference. Some of the sessions you have found more useful in serving your needs than have been other sessions of the conference.

1. Please rank the sessions from #1 the most useful to me to #27 the least useful to me.

Rank of Usefulness

_____ 1. Observing Session
_____ 2. Describing Observations
_____ 3. Preparation for Low Ratio Teaching
_____ 4. Low Ratio Teaching (Tuesday) "Springs"
_____ 5. Analysis of Teaching
_____ 6. Preparation for First Microteaching Session
_____ 7. Describing Events
_____ 8. Microteaching "Comparing Observations"
_____ 9. Post Module Critique
_____ 10. Supervision of Microteaching at Casis - Measuring Exercise
_____ 11. Low Ratio Teaching (Friday) - "Electricity"
_____ 12. Constructing Matrices
_____ 13. Performance Task Module
_____ 14. Organizing to Investigate
_____ 15. Microteaching Performance Tasks
_____ 16. Meaning of Data
_____ 17. Supervision of Microteaching at Casis - Performance Tasks
_____ 18. Information Units - Far West Laboratories' filmstrip on AAAS, SCIS, and ESS
_____ 19. Observation - Classification Questioning Behavior
_____ 20. Research and Development at The University of Texas, The Science Education Center
_____ 21. Research and Development at The University of Texas, The R & D Center on Teacher Education
_____ 22. Microteaching Observation - Classification Questioning Behavior
_____ 23. Supervision of Students at Casis
_____ 24. The Rationale for the Program - The Educational Encounter
_____ 25. Individualization of Instruction - Dr. Kurtz
_____ 26. Change Agents - Dr. Ford
_____ 27. Overview of Conference

OPERATION BLAST

2. Please state your reason for Choice #1.

Please state your reason for Choice #2.

Please state your reason for Choice #18.

Please state your reason for Choice #19.

3. Please suggest an alternative activity for the time spent in #18.

Please suggest an alternative activity for the time spent in #19.

4. What other comments or feedback would you like to make?

Instructions. We would like your frank, anonymous evaluation of each session in which you participated during this conference.

Please mark the rating scale located between the two polar words, "Weak" and "Strong" based on your feeling or evaluation of each session.

In addition, please add any additional feedback comments in the space provided.

1. Observing Session

Weak ..... Strong
Comments:

2. Describing Observations

Weak ..... Strong
Comments:

3. Preparation for Low Ratio Teaching

Weak ..... Strong
Comments:

4. Low Ratio Teaching (Tuesday) "Springs"

Weak ..... Strong
Comments:

5. Analysis of Teaching

Weak ..... Strong
Comments:

6. Preparation for First Microteaching Session

Weak ..... Strong
Comments:

7. Describing Events

Weak ..... Strong
Comments:

8. Microteaching "Comparing Observations"

Weak ..... Strong
Comments:

9. Post Module Critique

Weak ..... Strong
Comments:

10. Supervision of Microteaching at Casis - Measuring Exercise

Weak ..... Strong
Comments:

11. Low Ratio Teaching (Friday) - "Electricity"

Weak ..... Strong
Comments:

12. Constructing Matrices

Weak ..... Strong
Comments:

13. Performance Task Module

Weak ..... Strong
Comments:

14. Organizing to Investigate

Weak ..... Strong
Comments:

15. Microteaching Performance Tasks

Weak ..... Strong
Comments:

16. Meaning of Data

Weak ..... Strong
Comments:

17. Supervision of Microteaching at Casis - Performance Tasks

Weak ..... Strong
Comments:

18. Information Units - Far West Laboratories' filmstrip on AAAS, SCIS, and ESS

Weak ..... Strong
Comments:

19. Observation-Classification Questioning Behavior

Weak ..... Strong
Comments:

20. Research and Development at The University of Texas, The Science Education Center

Weak ..... Strong
Comments:

21. Research and Development at The University of Texas, The R & D Center on Teacher Education

Weak ..... Strong
Comments:

22. Microteaching Observation-Classification Questioning Behavior

Weak ..... Strong
Comments:

23. Supervision of Students at Casis

Weak ..... Strong
Comments:

24. The Rationale for the Program - The Educational Encounter

Weak ..... Strong
Comments:

25. Individualization of Instruction - Dr. Kurtz

Weak ..... Strong
Comments:

26. Change Agents - Dr. Ford

Weak ..... Strong
Comments:

27. Overview of Conference

Weak ..... Strong
Comments:

Appendix E

A COMPARATIVE STUDY OF THE EFFECT OF CERTAIN FACTORS ON THE TEACHING BEHAVIOR OF PRESERVICE ELEMENTARY TEACHERS OF SCIENCE

R. Scott Irwin
Kansas State Teachers College
and
David P. Butts
The University of Texas at Austin

Within the past decade, a number of elementary science curricula have been developed, field tested, revised, and widely implemented. These curricula place an emphasis on the teacher's role as a guide in student-centered science activities. Such curricula have helped form criteria with which colleges and universities concerned with undergraduate teacher education are searching for relevant, productive experiences for tomorrow's beginning teachers. A seemingly logical line of pursuit of effective teacher education experiences centers around teaching--its practice and analysis. Many components of teaching have been described, tested, and found to influence the patterns of interaction between teacher and child. Because the child and the instructional task are considered basic ingredients in any teaching situation, yet stand relatively untested in terms of their influence on teaching behavior, a basic problem is presented: To what extent do the child and the instructional task influence the teaching behavior of preservice elementary teachers?

The subjects for this study were senior-level elementary education majors enrolled in six sections of an experimental elementary science methods course offered at five Texas colleges during the fall semester, 1969.

The demonstration of certain patterns of interaction between teacher and child is a measurable outcome by which to assess the influence of these two components. Tests of differences in mean pre- and post instruction scores on eighteen factors of teaching behavior were analyzed for 86 subjects. The subjects were randomly assigned to three treatment groups. All groups received instruction in the use of interaction analysis. Group 1 subjects taught the same science lesson (pre- and post instruction) to different pairs of children, in a one-to-one low ratio setting; Group 2 subjects taught different pre-post science lessons to the same pair of children; and Group 3 subjects taught different pre-post science lessons to different pairs of children. All children were of second or third grade level.

Both first and second lessons taught by all subjects were recorded on audiotapes and analyzed using the 32-category Instrument for the Analysis of Science Teaching (IAST v. 2). Group mean scores on 18 specified patterns of interaction were computed from the matrices of all subjects lessons. The group means were analyzed using one-way analysis of variance.

Two principal conclusions drawn from this study are: (1) The effect of instruction in the use of interaction analysis, in which subjects from all treatment groups participated, produced more similarities than differences in changes of the teaching behavior of preservice elementary teachers of science, and (2) where differences occurred, the children taught influenced teaching behavior more than the instructional task.

Code or Name_____

Date _____

INSTRUCTIONAL DECISIONS TEST

FORM D

This session concerns a short film showing second grade children being taught science in a TV studio. This is the students' very first encounter with a different approach to science. You are asked to observe each scene and to respond to some questions about what you have observed. There are eight scenes and eight sets of questions. Be particularly observant as each scene will be shown only once.

FIRST EPISODE

TASK A

Denise has just responded to the instructor's question. Place a check in front of the action word that you believe best describes her action.

1. to identify
2. to order
3. to name
4. to demonstrate
5. to construct
6. to describe
7. to state a rule
8. to apply a rule

TASK B

Based upon your response to Task A, state a behavioral objective for the instructional activity employed here. Be sure to use your action word from Task A to state the objective.

At the end of this activity, Denise should be able to:

SECOND EPISODE

TASK C

Most of the class has named the white webb-footed birds "ducks." Suppose you knew the birds were actually geese. Considering the age level and other variables of this group of children, is their answer acceptable? Circle your choice.

Acceptable

Unacceptable

TASK D

State the reason for your previous response.

THIRD EPISODE

TASK E — When Dale was asked to find a shape like a rectangle, he traced around the salamander in an elliptical pattern. If you were the teacher, describe what you would do next.

TASK F — State the reason for your previous response.

FOURTH EPISODE

TASK G

You have now seen the strategy employed by the instructor in regard to the problem Dale had in finding a shape like a rectangle on the salamander. Of the following statements, mark the one which best describes the strategy the instructor used here.

1. Teacher provided the correct response and had Dale repeat it.

2. Teacher called on one of the other children to give help by asking that child the same question.

3. Teacher provided a new situation for Dale and allowed him to respond again.

4. Teacher rejected Dale's response and went on to another topic of the lesson.

FINAL EPISODE

TASK H

Scott has just pointed to the foot of the goose. Place a check in front of the action word that you believe best describes his action.

1. to identify
2. to order
3. to name
4. to demonstrate
5. to construct
6. to describe
7. to state a rule
8. to apply a rule

TASK I

Based on your response to Task H, state a behavioral objective for the instructional activity employed here. Be sure to use your action word from Task H to state the objective.

At the end of this activity, Scott should be able to:

SIXTH EPISODE

TASK J When Greg was asked to find a shape like a triangle, he traced a line next to the owl. If you were the teacher, describe what you would do next.

TASK K State the reason for your previous response.

SEVENTH EPISODE

TASK L Robin has become confused and seems unable to answer the instructor's question. If you were the teacher, describe what you would do next.

TASK M State the reason for your previous response.

EIGHTH EPISODE

TASK N

Circle the number of the following objective(s) that best describe(s) the behavioral objective(s) for the entire exercise you have viewed.

At the end of this lesson the student should be able to:

1. Better appreciate the geometric composition of animals.
2. Construct the component parts of regular two-dimensional shapes.
3. Discuss the habitat of several common animals, particularly as to whether they live on the farm or in the jungle.
4. Demonstrate that some parts of the animals as shown in pictures can be described in terms of regular two-dimensional shapes.
5. Verbalize concerning shapes of animals.

TASK O

Choose one of the objectives circled above. Give examples to indicate whether the objective was (or was not) reached.

Objective #_____.