DOCUMENT RESUME

ED 065 556 TM 001 701

AUTHOR	Luft, Max; And Others
TITLE	The Quality Assurance Model for Process Evaluation.
INSTITUTION	Southwestern Cooperative Educational Lab., Albuquerque, N. Mex.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
PUB DATE	Apr 72
CONTRACT	OEC-4-7-063827-3078
NOTE	25p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, Illinois, April 3-7, 1972)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Academic Achievement; Behavioral Objectives; Classroom Observation Techniques; Educational Objectives; *Evaluation Methods; *Formative Evaluation; *Models; Performance Tests; *Program Evaluation; *Quality Control; Standardized Tests; Student Behavior; Student Evaluation; Teacher Behavior
IDENTIFIERS	*Quality Assurance Model for Process Evaluation

ABSTRACT

The Quality Assurance Model for Process Evaluation has been developed by the Southwestern Cooperative Educational Laboratory. It provides educational administrators several alternative techniques for maximizing desired terminal behaviors. By working with project directors, the evaluator helps to assist the program's implementation, providing prescriptive feedback in the program's weakest areas. Portions of the model have been used by over 50 educational administrators working with 500 teachers in a six-state area in the Southwest. Several different programs have found it successful, and its adaptability to most any program or curriculum makes it important to existing educational administrators and those preparing for roles that will require skill in project evaluation. (Author)

THE QUALITY ASSURANCE MODEL FOR PROCESS EVALUATION

Dr. Max Luft, Mrs. Janice Lujan, and Dr. Katherine A. Bemis
Southwestern Cooperative Educational Laboratory, Inc.
Albuquerque, New Mexico

This publication is issued pursuant to terms of Contract No. OEC-4-7-062827-3078 with the Bureau of Research, Office of Education, U.S. Department of Health, Education and Welfare.

A paper presented at the Annual Convention of the American Educational Research Association, Chicago, Illinois, April 3-7, 1972.

THE QUALITY ASSURANCE MODEL FOR PROCESS EVALUATION

by:

Max Luft, Janice Lujan, and Katherine Bemis

Southwestern Cooperative Educational Laboratory, Inc.
Albuquerque, New Mexico

ABSTRACT

The Quality Assurance Model for Process Evaluation has been developed by the Southwestern Cooperative Educational Laboratory. It provides educational administrators several alternative techniques for maximizing desired terminal behaviors. By working with project directors, the evaluator helps to assist the programs implementation, providing prescriptive feedback in the programs weakest areas. Portions of the model have been used by over 50 educational administrators working with 500 teachers in a six state area in the Southwest. Several different programs have found it successful, and its adaptability to most any program or curriculum makes it important to existing educational administrators and those preparing for roles that will require skill in project evaluation.

THE QUALITY ASSURANCE MODEL FOR PROCESS EVALUATION

by:

Max Luft, Janice Lujan, and Katherine Bemis
Southwestern Cooperative Educational Laboratory, Inc.
Albuquerque, New Mexico

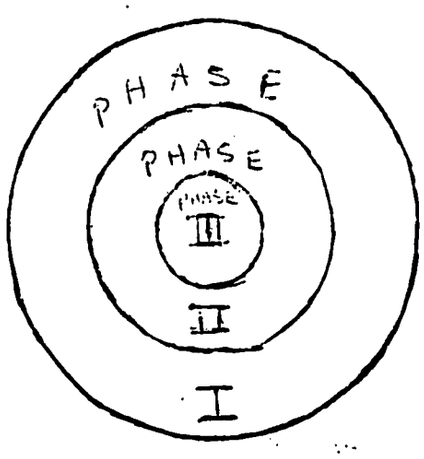
Introduction to the Problem

In the last 100 years, the role of the educational administrator has changed from facilitator to financial accountant of education. The principal, formerly the master teacher and the source of good educational instruction in his school has become the financial paper-tiger of the local education agencies. With increased federal funding, his role has become more oriented towards accounting than accountability. It is interesting to witness how little of the current administrator's time is actually spent improving the role of the teacher as the supplier of education in our present day school systems. Principals, coordinators and superintendants are engaged in the fight to keep records flowing to the government agencies assuring money for programs which are ineffectively evaluated and whose success is based largely upon the funding capacity which is reappropriated year after year.

To facilitate the role of the educational administrator as an evaluator, the Southwestern Cooperative Educational Laboratory (SWCEL) has developed the Quality Assurance Model for Process Evaluation. The aim is to provide administrators with an opportunity to maximize the identified terminal behaviors of educational programs. Highlighting

this technique is an evaluation scheme that provides constant feedback regarding success of program objectives both by isolating instances of program failure and providing prescriptive feedback for these cases and by identifying successful educational techniques. The model permits varying degrees of time and financial commitment by utilizing an approach allowing the administrator to select which phases of the evaluation model he feels he can adequately implement within given constraints of program, time and money. As shown in Figure 1, Phase III includes all of Phase I, and II, with Phase II requiring participation in Phase I.

Figure 1

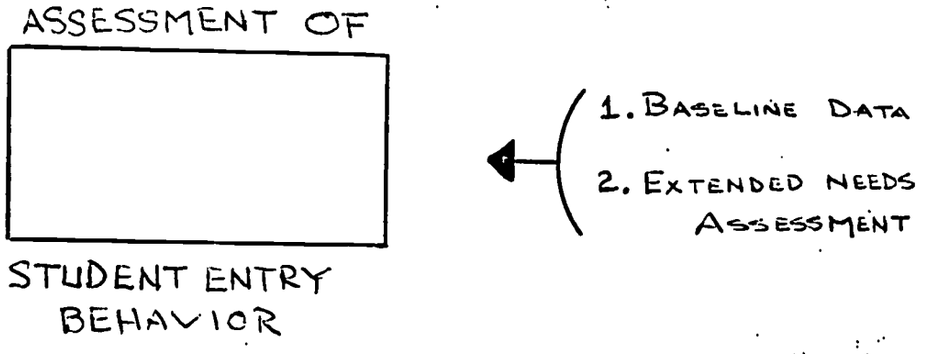


Phase I

If the Quality Assurance Model for process evaluation is to be implemented in schools, Phase I is required. The goal of the first phase is to identify which teacher behaviors relate to student success. After this is done, accountability is provided by identifying those teachers which are remaining within the given parameters or guidelines for success. The entire process requires six months to a year and allows for a modification of program and teacher objectives.

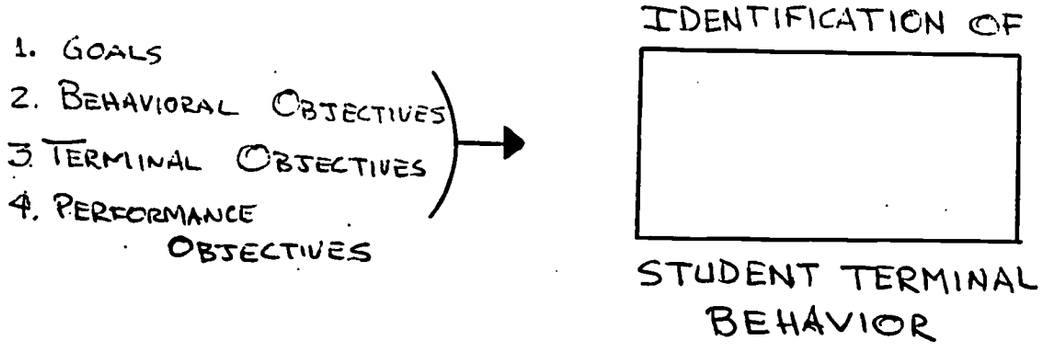
The first step in implementing Phase I is to assess the students' entry behavior. This is accomplished by gathering baseline data to find what the students look like when they enter the program. Many see this as an extention of the needs assessment. Here the aim is to gather data relevant to the program area which has been funded or to obtain information concerning the student at the beginning of a project. This includes what the average student looks like as well as defining the program's minimum and maximum entry behaviors. The widely used application of the Quality Assurance notion has been with SWCEL's Oral Language Program (OLP), a curriculum for teaching non-English speaking children to speak English. Basic guidelines state that if a student falls within certain parameters at entry time, then he is indeed going to receive maximum benefits from the program. These parameters attempt to minimize the possibility of working with the student who already is proficient in English. Similar parameters must be established for other projects being evaluated with the Quality Assurance Model. If we are applying this process to a remedial reading program and the child is reading two to three grade levels ahead of expected reading level, it is unwise to include him. Figure 2 indicates the beginning design for evaluation of teacher behavior.

Figure 2



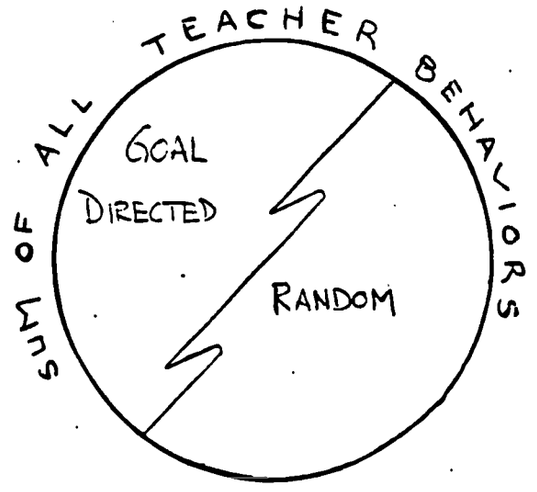
The second step is to identify the program's desired terminal behaviors. Once we know the students' entry behavior, we must identify the program goals. (Goals may have been already established and only need modification at this point.) Once global goals have been identified, then behavior, terminal or performance objectives must be identified. Specific statements must be made concerning terminal behavior expected of the students in the program. Often the behavioral objectives or performance objectives may be stated for certain milestones within the program as well as the terminal goals. We might say, for example, that after application of the program for eight to ten weeks we expect an improvement of thirty per cent on the child's entry score. This does not indicate specific behaviors expected of the students at the projects' termination. Figure 3 shows the placement of performance objectives in the paradigm.

Figure 3



After identifying entry behavior and desired terminal behavior, techniques are identified for moving the student from entry to desired terminal behaviors. These are called goal directed behaviors and are, at first hypothesized by the project administrator and teachers as to what pedagogical techniques should be employed to maximize attainment of desired terminal behaviors.

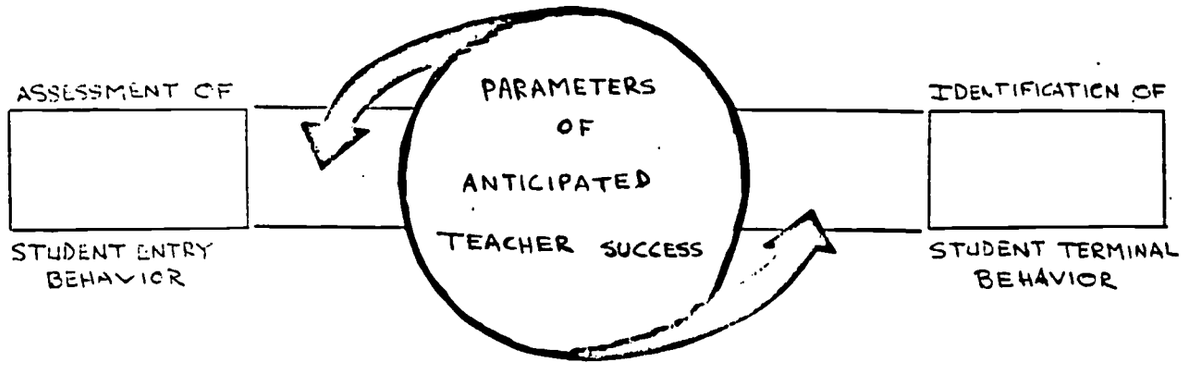
Figure 4



All teachers' behaviors, as seen in Figure 4, can be identified as goal directed or random. Random behavior is not necessarily bad behavior; it just has not been identified as having a maximum probability of increasing chance for student success. At this stage, eight to ten teacher behaviors should be identified which, it is hypothesized, will relate positively to student attainment of the desired terminal behaviors. These must be observable, specific actions which the teacher performs or the teacher and student jointly perform. Examples are: teacher touches student in a positive manner, teacher verbally praises a student, or teacher allows students to discuss non-academic affairs. The behaviors

suggested form parameters of teacher behavior. Figure 5 indicates these parameters and their relationship to entry and terminal behaviors.

Figure 5



These goal directed behaviors are placed on an observation schedule which can be used to ascertain whether or not they are occuring. Appendix A contains examples of observation schedules established by SWCEL for project evaluations. Using the observation schedule, the observers must establish some degree of validity and interrater reliability. Validity is gained by identifying the specific behaviors which lead to affirming that the goal directed behavior has occurred. If "teacher touches student," has been identified as a behavior, it needs to be exactly defined. After this has been identified, then the observers must establish reliability. This can be done by having two observers who will be using the schedule, observe the same classroom to see whether they are in fact agreeing on what they see. After the observation, the observers compare their observation schedules and note the differences. Differences are discussed, agreements reached, and the synonymous markings are reinforced.

If a single observer is to be used in the evaluation, he may desire to establish reliability using a video tape. By viewing the tape at two separate instances, he then may establish a test, re-test reliability. He could also review the video tape periodically to see how his scores agree with himself.

Process evaluation permits ongoing change of the program. If a program is to be modified, the evaluation techniques also will require modification. The observation schedule will show many items which have a low relationship to student gain; one purpose of the Quality Assurance Model is to improve the predictability of the observation schedule. This is done by a regression of observed teacher behaviors with student gain. A correlation matrix is generated which indicates interrelationship of behaviors as well as relationship of observed behaviors with student gain. Those behaviors which have a low correlation or near a zero correlation with student gain are retained. The multiple R is identified, and squared to indicate the percentage of total variance that it is accounted for by behaviors on the observation schedule.

The next step is to modify the observation schedule by including new goal directed behaviors chosen from the previous random behaviors. These replace the behaviors which had low correlations with student success. The new observation schedule which has now been formed should have a higher predictability of student gain and, therefore, accounts for a greater variance in terminal student behaviors. Experience indicates that one can account for up to eighty percent of student growth by an observation schedule device such as this.

In summary, then, Phase I includes identification of student entry behaviors, desired student terminal behaviors, and parameters of teacher behaviors which have a predictive relationship to desired student terminal behavior. During this phase of evaluation, teachers are monitored with an instrument which identifies behaviors as either within the given parameters (goal directed) or outside given parameters (random). Through the Phase I evaluation, an attempt is made to replace the teachers' random behaviors with goal directed behaviors. The monitoring instrument is periodically updated in two ways. First, parameters of teacher behavior which have shown only slight statistical correlation with student behavior are removed. Secondly, other different parameters which might be predictive of student gain are then added. Seven to ten observations are generally needed to generate enough data to complete an observational revision cycle.

Phase II

The goal of Phase II is to provide accountability through assessments of the students' behavior. Where Phase I examined teacher behavior through an observational device to provide accountability, Phase II will address itself to student behavior and relate this to teacher behavior to provide another way of implementing program accountability. Rationale for Phase II is that teachers who have students performing at the highest level will produce students whose terminal behavior is at the highest level. Students with a low entry behavior will have the lowest terminal behavior providing that all students receive the same treatment. If the treatment varies from teacher to

teacher, then those treatments which are successful must be generalized to all teachers, and those treatments which are ineffective must be removed.

The first step in Phase II is to identify the entry levels of students. Through use of an assessment device, we need to know the relative standing of several classes participating in the same program. The assessment measures may be either standardized achievement tests or criterion referenced tests. Many programs have incorporated performance objectives in which the assessments measured are actually skill attainments as opposed to paper and pencil drills. Class averages are obtained for each teacher's group participating in the project.

The second step is to change these teachers' class averages to standardized T scores. The purpose of modifying scores to the standardized T score is to allow different assessment devices to be used throughout the evaluation period. A T score has a mean of 50 and standard deviation of 10. Normally, two-thirds of the class averages will fall between forty and sixty; and 95 percent of the teacher class averages will fall between thirty and seventy. Figure 6 gives an example of several teachers' class averages with raw and converted scores.

The next step is to identify an assessment device which may be repeatedly used during the project. If the project evaluation is to be for a one-school year, then assessment devices may be used at different intervals (i.e., each month, every two months, or every three months). The more frequent the student assessments, the better the evaluation. However, one can get carried away with this and the trade off matrix for teacher time spent administering and scoring tests must

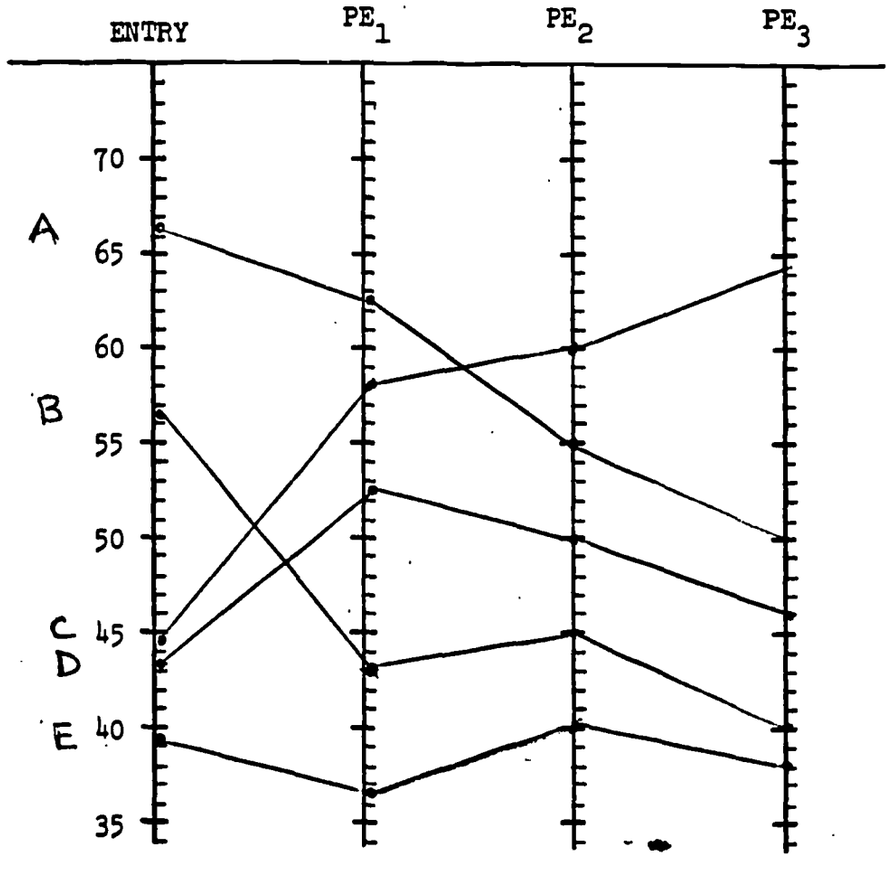
Figure 6

Teacher name	Class Average of raw score	Converted T score
Mrs. Apodaca	22.3	66.3
Mrs. Black	19.1	56.5
Mrs. Cook	15.3	44.8
Mrs. Davis	14.8	43.2
Mr. Edsel	13.5	39.2

be played against the value of the teacher as instructional leader of the program. No more than six student assessments be made during the year. Many techniques for student assessments can be used. Multiple forms of the same test may be used or different assessment measures may be used.

After administration of the first process evaluation, the scores are then again changed to the standardized T score. T scores are now plotted on the graph as shown on Figure 7.

Figure 7



Teachers' change scores are noted. This is a change of a relative performance of a class from the entry behavior assessment to the first process evaluation assessment. The teachers who show an increase in T score are theoretically using behaviors which allow students to learn at a greater rate than anticipated. Theoretically, the lines should remain almost parallel. Chance variation has been computed, and for four or five teachers participating in the program it is found that a fluctuation of eleven points will not occur more than five times out of 100. The declining graph would indicate a teacher whose students are not performing up to their expected level of performance. Thus at

Phase I process evaluation, one can begin to get an assessment of the teacher's behavior by looking at student assessment. This provides program accountability at an early stage.

If change in standardized T scoring exceeds the chance level, then the administrator must determine what teacher behaviors are causing this change. Two very important conditions are where the graph is inclining and there is an increase in standardized score greater than eleven points for a specific example of five teachers. (Note teacher 4 on Figure 7.) In this case the teacher is doing something to "turn on the students." It is the project evaluator's responsibility to identify what teacher behaviors are exciting and motivating the students so that they are learning more than anticipated. When these behaviors are identified, they are then generalized to all of the teachers in the program so that all have the opportunity to benefit from the teachers' goal directed behaviors.

The second condition is shown in Figure 7 with a decline of student achievement greater than would be anticipated. The project evaluator identifies what the teacher is not doing that she should be doing or what she is doing that she should not be doing and attempts to replace these teacher behaviors with goal directed behaviors. This may be theoretically sound but is often practically difficult. However, by using video tapes, repeated classroom observations, and consultation from other staff members, these behaviors can most often be identifed.

Subsequent evaluations are made throughout the project with each successive standardized T score compared to entry behavior. Graphs of teacher performance on the basis of student assessments are then

gained at several ongoing points of the program. One can then determine what behaviors are and are not being met and what behaviors are not being met early in the program's evaluation. At this stage, it is most legitimate to modify program objectives as well as the desired teaching behaviors.

In summary, Phase II concentrates on student performance. A number of student assessment devices are created or identified using either criterion reference measurers or item sampling from more common standardized instruments. These assessment devices are administered to participating students. Averages are then formed for each classroom unit and these averages are converted to T scores. Teachers' classes are then ranked in the order of students' performance on the first assessments device. After administrations of the second assessment instrument, analysis similar to that performed in the first assessment is completed. Teachers within significantly increasing T scores are then classified as using the program at above average competence. Teachers with significantly decreasing T scores are classified as using the program at below average competence. In the case of a decreasing T score, behaviors hampering the effect of the program are identified and replaced with goal directed behaviors. Where teachers have high rates of increase in their T scores, their goal directed behaviors identified and generalized to all participating teachers. Appendix 3 indicates an actual situation where this assessment was applied throughout the school year.

Phase III

Phase III involves a further commitment on the part of the local education agency (LEA). The SWCEL QAS notion believes accountability lies not only with the teacher, but also with the LEA and the contractor or program producer. The successful implementation of the program is dependent upon having appropriate students with whom to work. It is the job of the LEA to provide students who have the correct entry behavior. If the students are not of the proper entry behavior, the program's effectiveness cannot be maximized. The OLP has assigned students to six levels according to their scores on an entry measure. Low scores on the SWCEL Test of Oral English Production indicate need for the Oral Language Program. Figure 8 indicates student levels relation to entry scores.

Figure 8

Entry Score	Student Level
000 to 075	A
076 to 100	B
101 to 115	C
116 to 130	D
131 to 150	E
151 and over	F

The higher the entry score, the less accountable for student growth is the contractor. This is the first step in a joint commitment between the LEA, the teacher, and the district.

The second step of accountability rests with the teacher. In order for the project to be successful, the teachers must use the materials correctly. Three aspects of teacher behavior are monitored here. They are: 1) the rate of progression through the lesson; 2) the frequency of attendance at inservice meetings; and 3) the frequency of observation by the QAS. These three factors are used to determine a teacher level.

Contractor accountability is a function of student level and teacher level. Anticipated student gain is listed in Figure 9. Students either reach the criterion gain or fail to reach the criterion gain. The ratio of student success over student success and failure is a function of the contracted price.

The final phase requires testing of every student before and after the project. This is the most time consuming and costly part of the Quality Assurance Program, but yields added accountability of the LEA and contractor.

The model has been implemented in various phases for the 1969-70, 1970-71, and 1971-72 school years in over 600 classrooms in a six state area in the Southwest. Over 50 educational administrators have been trained in applying the Quality Assurance Model to various projects. Comparisons are being made on over 100 teachers using the same educational program, but participating in different phases of the model.

Terminal Teacher Levels	Entering Student Levels					
	Student Level A	Student Level B	Student Level C	Student Level D	Student Level E	Student Level F
Teacher Level One	10	9	7	5	2	1
Teacher Level Two	20	18	14	10	4	2
Teacher Level Three	30	27	21	15	6	3
Teacher Level Four	40	36	28	20	8	4
Teacher Level Five	50	45	35	25	10	5
Teacher Level Six	60	54	42	30	12	6

Expectancy Matrix of Student Gain Scores on the SWCEL Test of Oral English Production

Figure 9

Data indicate the more phases of evaluation that are implemented, the greater the student gains. A sampling of 20 participating teachers using the model stressed their preference for this type of evaluation where the administration was using a prescribed set of evaluation instruments over the unstructured or nonexistant observation. In one specific program, a multiple regression of observed teacher behaviors had a correlation of .9 with student gain.

The implications and opportunitites for educational administrators are numerous. This model demands inclusion in the university curriculum so that implementation may be made in a wide variety of programs and projects. When evaluating a project on line assessment resulting in prescriptive feedback is much more powerful than the typical pre-test, post-test paradigm.

The model is currently being taught at the University of New Mexico. Reaction by participating students is excellent. The course culminates in the application of the QAS model to a specific project.

APPENDIX A

YSLETA OBSERVATION SCHEDULE
YSLETA INDEPENDENT SCHOOL DISTRICT
EL PASO, TEXAS

DEVELOPMENTAL READING PROGRAM
OBSERVATION SCHEDULE

Use a / each time the following behaviors occur:

I. MOTIVATIONAL TECHNIQUES	I	III	V
A. T. gives token reinforcement.			
B. T. immed. reinforces student response.			
C. T. touches student in positive manner.			
D. T. gives verbal praise (personal praise)			
E. T. refers to past experiences of students.			
F. T. presents new and differing learning experiences.			
G. Student(s) assists teacher in preparing for class.			
H. T. talks about non-academic subj.'s (i.e.,students interests)			
II. TEACHING TECHNIQUES	**II**	**IV**	**VI**
A. Questioning Techniques 1. T. gives cue instead of modeling.			
2. T. asks Q.--initiates ans. from S. longer than Q.			
B. Variation of Educational Techniques. 1. T. incorporates creative, manual exp. into program (art). i.e.			
2. T. follows lesson plan			
3. Use of teacher provided games.			
4. T. uses proper materials (i.e., supplied answer sheets).			

SUMMARY INFORMATION (circle one)

1. Teacher uses structured, written evaluation. Y N
2. Teacher maintains list of books checked out. Y N
3. Students have checked out books today. Y N
4. There are childrens works on display. Y N

CURRICULUM PACKAGE

	used	les.no.		used	les.no.
Commercially Taped Books	____	____	Open Highways	____	____
Hoffman AV Series	____	____	Reading Incentive	____	____
Language Experience	____	____	Talking Pages	____	____
MacMillian Decoding	____	____	Pacemaker Readers	____	____
Peabody Kits	____	____			
Taylor AV Program	____	____			

NUMBER OF CHILDREN IN GROUPS ____/____/____/____/ DATE:_____

TIME (BEGAN):_____ (ENDED):_____ SCHOOL:_____

TEACHER:_____ OBSERVER:_____

RRR OBSERVATION SCHEDULE

Check at right if behaviors below occur		Tally below each time the following behaviors occur						
		Verbal Behavior				Non-Verbal Behavior		
		Enc. rmk.	Prsng.	Warning	Spkg. ov. p. noise	Smig.	Tchg.	Frwng.
1. ESTABLISH CRITERIA T. stands by clock and mouse. T. shows pupils how high mouse will go if they get all correct. T. moves mouse down to zero.								
2. T. states purpose for child.								
3. Suggested T. Activity (only when it occurs in lesson).								
4. PRESENTATION T. holds up stimulus card.								
5. RE-PRESENTATION T. says, "Watch again."								
6. EXAMPLE CARD T. says, "Watch me mark the ..."								
a. DISTRIBUTION P. have appropriate worksheets. P. have names on worksheets.								
b. DISTRIBUTION TIME 0-3 minutes. 3-5 minutes. More than 5 minutes.								
8. ADMINISTRATION T. tells pupils to move cover sheet down.								
9. GRADE AND COLLECT PAPERS 0-3 minutes. 3-6 minutes. More than 6 minutes.								
0. CONFIRM T. tells pupils if criterion was reached. T. moves mouse up clock.								
1. REWARDS T. gives out toys. T. gives out tokens. T. gives social praise. None of the above occurs.								

Observer:_____ Number of Pupils:_____

Teacher:_____ Lesson Number:_____

School:_____ Time Lesson Begins:_____

Date:_____ Time Lesson Ends:_____

Each and every pupil was rewarded: Yes:_____ No:_____

(If no, please comment.)

COMMENTS:

SWCEL QUALITY ASSURANCE PROGRAM TALLY SHEET

Teacher:_____ Observer:_____

School:_____ Date:_____

# of Boys:_____ # of Girls:_____

Lesson #:_____ Time Began:_____

MARK EVERY OPPORTUNITY AS IT ARISES
(/ when arises; X when occurs)

1. REINFORCEMENT	ACTIVITY
WAITS (For child to respond).	
PROMPTS (With first word if he cont. to have difficulty)	
IMMEDIATELY (Lets the child know rt. away that he made good res.)	
GROUP (Reinforces group verbally, nonverbally)	

2. MODELING	ACTIVITY
SIGNAL (Precedes mod. w/ signal, waits for attention)	
CLEARLY (Mod. loudly, close to children)	
CONSISTENCY (Repeats the same model the same way each time)	
BACKWARD BUILDUP (Proceeds from last part of sentence to first)	

3. CONVENTIONS	ACTIVITY
LISTEN (Uses verbal and hand signal)	
REPEAT INDIV. (Repeat after me; "Johnny, say...")	
REPEAT GROUP (Grp. repeat after me)	
CHAIN DIALOGUE (A to B, B to C, C to A)	

4. EVOKES QUESTIONS	ACTIVITY
GIVES CUE (To asking of questions; "ask...")	
TEACHES CUE (To asking of questions)	

5. CORRECTING ERRORS	ACTIVITY
CENTRAL (Corr. errors central to les. obj. one at a time)	
IMMEDIATELY (Corr. err. imme. uses resp. block, if p. secure)	
REINFORCE CORR. RESPONSE (Not the error)	
RE-EVOKE (Have p. say corr. resp. again to practice)	

6. SUMMARY DATA	YES	NO
1. Every p. had chance to talk.		
2. Teacher followed lesson plan.		
3. Teacher used test results for recycling & revision.		
4. Teacher taught three lessons in last five days.		
5. Teacher used content tests.		
6. Teacher does NOT proceed without pupils' attention.		
7. Teacher does NOT discourage vocal responses.		

Time lesson ended:_____

Length of post-observation conference:_____

COMMENTS:

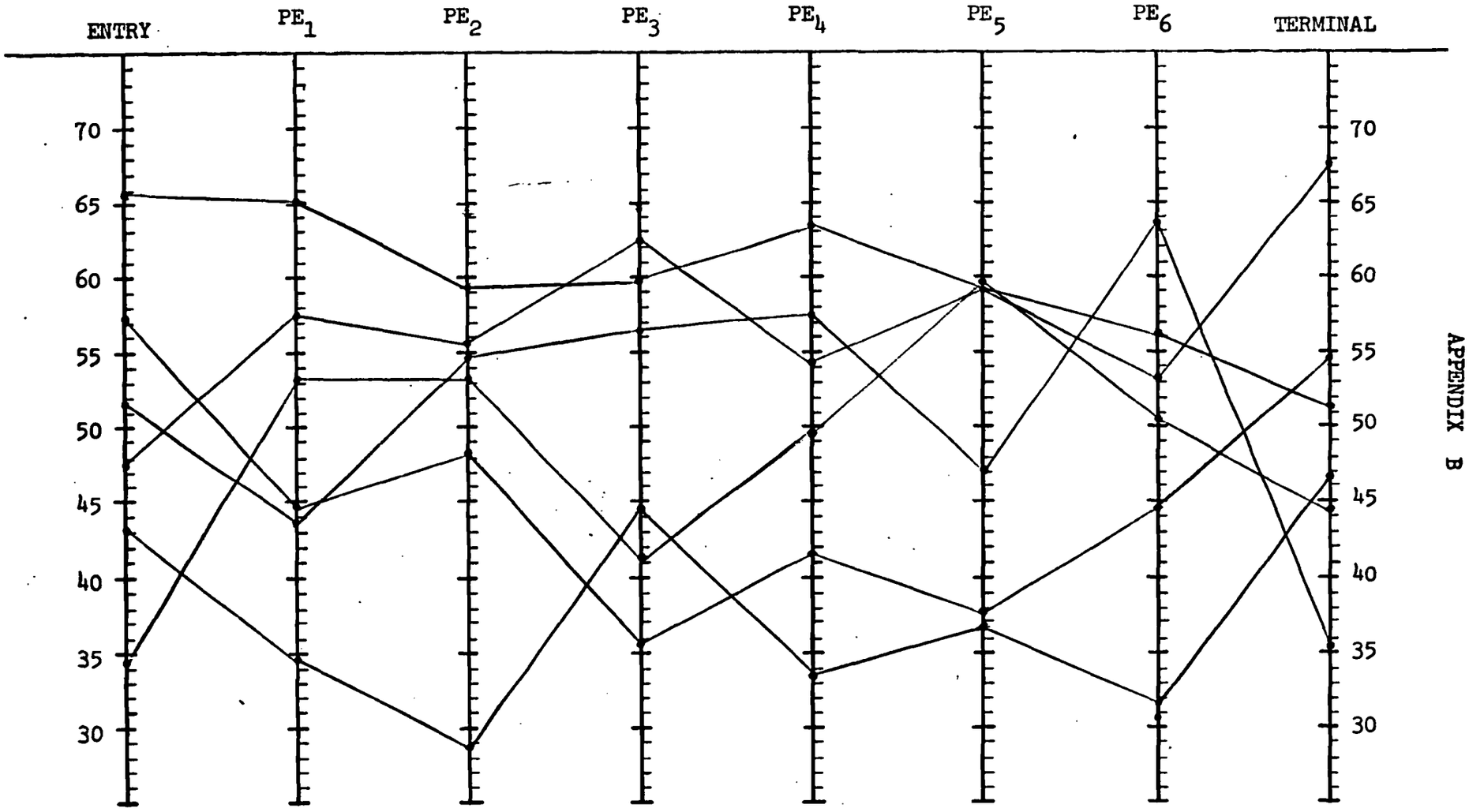
PROCESS EVALUATION - SUMMARY CHART OF STANDARD SCORES

Form PE3
11/71

Southwestern Cooperative Educational Laboratory, Inc.
1404 San Mateo SE, Albuquerque, New Mexico 87108

NAME _____ DISTRICT/PROJECT JAY ADDRESS JAY, OKLAHOMA

O.L.P.



INST. DATE	SWCEL PRE	CONTENT 1	CONTENT 2	CONTENT 3	CONTENT 4	CONTENT 5	CONTENT 6	SWCEL POST
	9/69	10/69	11/69	12/69	1/70	2/70	3/70	4/70

APPENDIX B