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ABSTRACT

This paper reports the results from an investigation of a method for systematic development of a procedure for assessing the administrator and instructional leader roles in implementation of an innovative school program. The purpose of the study was to design and field-test a feasible and useful approach to examining the degree of operationalization of certain administrative roles and responsibilities that have been identified as critical for performance by school principals and other designated instructional leaders in order to provide adequate implementation support. Instrument design procedures are described and results from the study are summarized based on data from 19 teachers, five principals, and four education specialists from five elementary schools where an innovative educational program known as the Adaptive Learning Environments Model (ALEM) was implemented. The implications for further research in the development of procedures for assessing the degree of program implementation and in the use of implementation assessment data also are discussed. Appendices include sample performance indicators and scorable descriptors, a list of essential performance indicators, and sample pages from the teacher survey for the principal and education specialist implementation measures in the ALEM. (Author/LMO)

Evaluating Administrative Components of Program Implementation in the Adaptive Learning Environments Model

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Abstract

This paper reports the results from an investigation of a method for systematic development of a procedure for assessing the administrator and instructional leader roles in implementation of an innovative school program. The purpose of the study was to design and field-test a feasible and useful approach to examining the degree of operationalization of certain administrative roles and responsibilities that have been identified as critical for performance by school principals and other designated instructional leaders in order to provide adequate implementation support. Instrument design procedures are described and results from the study are summarized based on data from 19 teachers, five principals, and four education specialists from five elementary schools where an innovative educational program known as the Adaptive Learning Environments Model (ALEM) was implemented. The implications for further research in the development of procedures for assessing the degree of program implementation and in the use of implementation assessment data also are discussed.

Evaluating Administrative Components of Program Implementation in the Adaptive Learning Environments Model

The measurement of program implementation variables and effects in evaluation research in education has received considerable attention during the past few years. Educational program developers, researchers and evaluators recognize that utilization of the traditional "treatment/yield" paradigm within classical experimental designs is a necessary, but insufficient condition to adequately understand how and why innovative programs work. The use of classical pretest and postest control group experimental designs, while useful from what Popham (1975) refers to as the "conclusion-oriented" research perspective, leaves much to be desired from the "decision-oriented" perspective of the educational evaluator. Demonstrating that a particular program treatment had a statistically significant effect is certainly important. However, this information may not be especially useful to adopters/adaptors of innovative programs who usually entertain more extended questions such as "What makes the program work?...What elements of the program need to be implemented (and at what levels) to make the program work?...What are the critical features of the program that should be observed if it is indeed in place and operative?", and so on.

These questions center on the measurement of elements of program implementation. They suggest that evaluators of educational innovations should collect such information to better understand the how's and why's of program effects. The focus of the measurement and evaluation of program implementation variables is program description, development, modification, improvement, adoption, staff development, and the like. The importance of assessing program implementation

variables and the decision focus for evaluating program implementation have been recently elucidated by Wang and Ellett (1982):

> Innovative educational interventions that effectively improve student learning can have a substantial impact on existing schooling practices--if the innovations are used. An educational program with the most impressive evidence of effectiveness can have no effect on classroom processes and student learning unless teachers, administrators, and relevant school personnel accept the ideas and procedures and decide to use them. The extent to which any innovative program is used, however, depends on a host of factors. A critically important factor is evidence of effectiveness, that is, the program's outcomes and the conditions under which it was implemented to produce those outcomes. The availability of information on the potential impact of the program on the school's day-to-day operations is crucial. Information is needed on who does what to produce what mediating effects, what processes lead to certain intended outcomes, and what contexts and conditions are critical for program implementation. Potential program adopters and users must be able to determine not only expected program performance but also the nature of specific links between the implementation of each aspect of the program and its intended outcomes. Program validation, therefore, should provide such information so that meritorious educational innovations can be described in ways that facilitate teachers' and administrators' decision making (p. 35-36).

The need for developing instrumentation and assessment methodologies to measure the degree of program implementation is well documented in the recent literature on program evaluation (e.g., Ellett, 1981; Fullan and Pomfret, 1977; Hall and Loucks, 1977; House, Glass, McLean & Walker, 1978; Rutman, 1980; Wang and Ellett, 1982). However, methodological advances and measurement technologies have been rather slow to develop. This seems partially due to the expense and time involved in conducting direct observation and interview studies (the preferred methodology) and difficulties in developing assessment procedures that have sufficient validity and reliability to measure program implementation elements and characteristics. The study described in this paper was designed to further understanding of the administrator and instructional leader roles of school principals and others in supporting the implementation of innovative school programs. Specifically, the study was conducted to test a system of assessment and instrumentation for monitoring and evaluating the degree of

implementation of both roles. The particular innovative program with which the implementation assessment system was field-tested was the Adaptive Learning Environments Model (ALEM). In the first section of the paper, design and classroom operation of the ALEM are briefly described to provide background information. In the second section of the paper, the development of the implementation assessment system for the administrator and instructional leader roles is discussed. Then, the procedures, instrumentation, and results from the study are presented. Finally, the implications for future research and for further development of effective program implementation monitoring and assessment systems are discussed.

The Adaptive Learning Environments Model

The Adaptive Learning Environments Model (ALEM) is an innovative program in early childhood education that has been under development and study at the Learning Research and Development Center, University of Pittsburgh, for over a decade. The central goal of the ALEM is to provide learning environments that are responsive to the characteristics and learning needs of individual students (Wang, 1980). The program's design systematically integrates aspects of individualized prescriptive instruction that facilitate basic skills mastery (Bloom, 1976; Glaser, 1977; Rosenshine, 1979) with aspects of informal education that foster self-responsibility (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981; Marshall, 1981; Peterson, 1979). The ALEM consists of 12 critical program dimensions. Nine are related to the process of providing adaptive instruction. They are Creating and Maintaining Instructional Materials, Developing Student Self-Responsibility, Diagnostic Testing, Instructing, Interactive Teaching, Monitoring and Diagnosing, Motivating, Prescribing, and Record Keeping. Three of the dimensions -- Arranging Space and Facilities, Establishing and Communicating Rules and Procedures, and Managing Aides -- are related to providing

support for implementation of adaptive instruction in the classroom. In addition to the 12 dimensions, implementation of the ALEM is supported by a delivery system that is made up of four major components: an ongoing, data-based staff development approach; instructional teaming; multi-age grouping; and family involvement.

The expected outcomes of the ALEM for students include effective use of school time, personal motivation to spend the time required to master basic academic skills, and development of competence and responsibility for managing learning and elements of the learning environment. Teachers in ALEM classrooms are expected to be able to spend significantly more time managing learning than managing behavior. (For more information on the design, implementation, and effects of the ALEM, see Wang, Gennari, & Waxman, 1985, and Wang & Walberg, 1983).

An underlying assumption of the ALEM's design is that, for most schools, program implementation requires some fundamental changes in curriculum materials, instructional philosophy and procedures, organizational and staff support systems, teaching and learning processes, and teachers' and students' roles in the learning environment. Thus, the measurement of such program implementation variables in past studies of the effectiveness of the ALEM has been a constant concern. The Implementation Assessment Battery for Adaptive Instruction (Wang, 1980; Wang, Catalano, & Gromoll, 1983) is used by school personnel on a regular basis to collect information for staff development purposes and to monitor the overall degree of implementation of the ALEM in their classrooms. Implementation data also are collected three times during the school year for program evaluation purposes. A total of 106 performance indicators, which are grouped in the Battery's six data collection forms, have been identified to assess the presence and absence of the critical program design dimensions of the ALEM

(Wang, Nojan, Strom, & Walberg, 1984).

The measurement of program implementation variables in past studies of the effectiveness of the ALEM has always been a concern. A recent study by Strom and Wang (1982) reported the results of validating the ALEM degree of program implementation instruments for classroom level variables in 138 classrooms. Classroom processes measures, student learning outcomes and staff development criteria were examined for these classrooms in relation to scores on the ALEM program implementation measures. The results suggested a moderate to high association between these variables, supporting the criterion-related validity of the program implementation measures used in evaluating implementation of the ALEM. Additionally, generalizability analyses supported the reliability of the ALEM implementation measures in differentiating ALEM components and characteristics and generalizing over observers and assessment occasions.

School principals and education specialists play important supportive and administrative roles in the implementation of the ALEM. They are involved in initial program startup, program monitoring and maintenance and providing ongoing staff development for ALEM teachers. They are considered critical to the success of the level of implementation of the ALEM by the manner in which they provide supervision, supportive and consultive services, and leadership for classroom teachers. Indeed, recent research reviews of the literature on effective schools (Mackenzie, 1983) show that the quality of these support and leadership roles is an integral part of school effectiveness and productivity.

Purpose

The purpose of the present study was to develop and pilot test an assessment procedure to examine the roles, responsibilities, and functions of school principals and education specialists in implementation of the ALEM. To date, there are no systematic measures of the performance of these roles as

they relate to overall program implementation. The "grapevine structure" among teachers implementing the ALEM, the experiences and observations of ALEM developers and consultants, and the philosophy and operating assumptions of the program all suggested the need to develop and pilot-test an assessment system for measuring implementation of the administrative and instructional leadership components of the ALEM.

Methodology and Procedures

Subjects

Subjects for the study were school principals and education specialists implementing the ALEM in selected classrooms in five elementary schools in a large urban school system during the 1982-83 school year. The school principals and the ALEM education specialists were considered the primary administrative support personnel for teachers in the ALEM classrooms.

Instrumentation

Two kinds of instruments were developed for this initial pilot study: 1) interview frameworks to be administered by an "outside" interviewer; and 2) a survey to be administered to all ALEM teachers. The interview frameworks assessed the degree to which school principals and education specialists implemented the roles, duties, and responsibilities of administrators and instructional leaders under the ALEM. One interview framework focused on the school principal, and the other focused on the education specialist. Information on teachers' assessments of the roles/duties carried out by principals and education specialists was obtained via the ALEM Program Implementation Survey for Teachers (hereafter referred to as the Teacher Survey).

During the initial stages of the study, a process model for developing and revising a system for assessing the administrative and instructional leadership

components of the ALEM was designed. The general sequence of elements in the model is presented in Figure 1. The primary focus of Steps I through VI was to establish content validity of the instrument items and to develop adequate operational definitions for administrative roles, duties, and responsibilities of the ALEM principal and education specialist in terms of observable behaviors. The ALEM program developer and staff development coordinator (the most highly experienced persons in the ALEM) worked closely with an outside consultant in the development/design of the instruments. Development of final items and a framework for the interviews and the Teacher Survey required approximately four days. Steps VI through X in Figure 1 depict the sequence of data collection, analysis, and revision of the pilot instruments.

Completion of Step IV yielded a large matrix of job duties and responsibilities for the ALEM principal and education specialist that could be operationalized in terms of observable behaviors and cross-classified by appropriate assessment data sources (e.g., interviews, direct observation, information obtained from parents, teachers, and students). Almost all the behaviors identified with these procedures were considered capable of being assessed by either an outside interviewer/observer or ALEM classroom teachers. The decision was made to collect data for each of the behaviors by using a trained outside interviewer (one with knowledge of the ALEM's components and goals, but with no prior interaction with ALEM school site personnel in the pilot schools) and the Teacher Survey.

Each of the performance indicators of the 12 critical program design features of the ALEM was defined further with separate sets of scoreable descriptors for the roles of school principal and education specialist. Two kinds of scoreable descriptors were developed: 1) hierarchical, sequential descriptors scored on a 1- to 5-point scale; and 2) sets of four essential

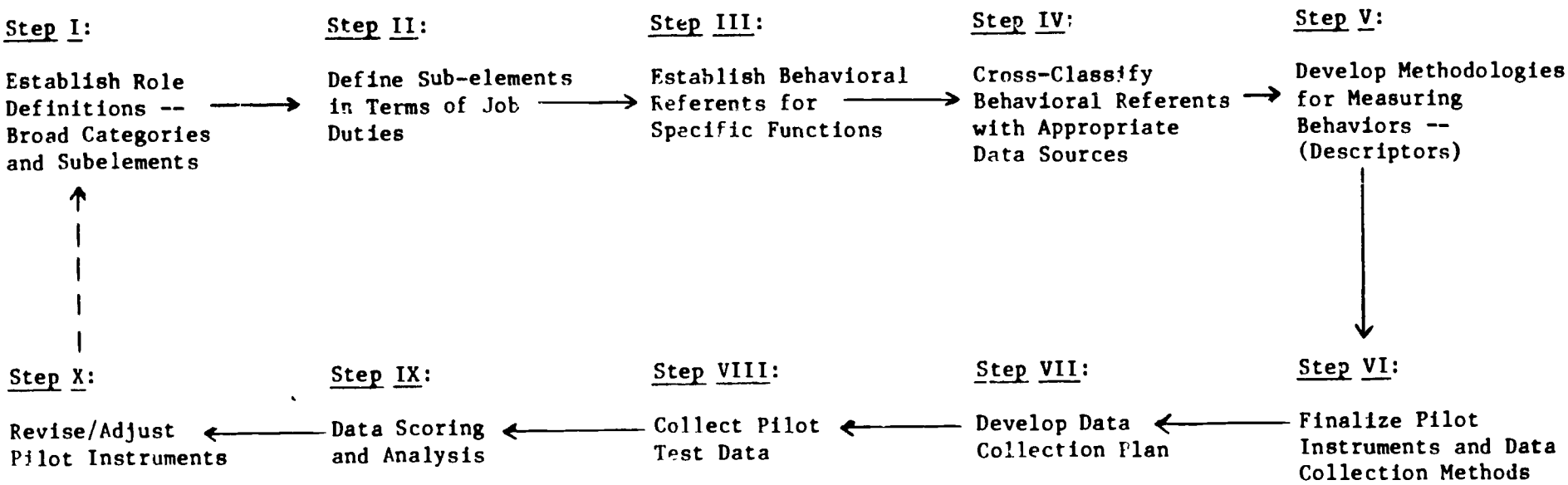

Figure 1. Process model for developing, piloting, and revising the instruments for assessing the implementation of the ALEM by principals and education specialists.

behaviors which served to operationalize a particular performance indicator (also scored on a 1- to 5-point scale). For the first kind of descriptor, a score of 3 was considered an "adequate" level of implementation of ALEM program behaviors. A score of 1 was viewed as an "inadequate" level of implementation and a score of 5 was considered a "superior" level of implementation of ALEM program behaviors. Scores of 2 or 4 were considered somewhat less than adequate and somewhat more than adequate, respectively.

Two kinds of descriptors were required in developing the scoring methodology for the implementation measures since some indicators could not be clarified or scaled for scoring with the hierarchial, sequential methodology. APPENDIX A contains sample sections of the interview frameworks for the school principal and education specialist to illustrate the essential descriptors methodology and the hierarchical, sequential descriptor methodology for selected performance indicators.

The final assessment framework for principals consisted of three job roles (Instructional Leadership, Communications, and Program/Management/Support) defined by 15 essential performance indicators (each scored on a 1 to 5 scale with a set of scoreable descriptors). The final assessment framework for education specialists consisted of eight key job roles (Pre-service Training, Curriculum Planning/Updating, Monitoring Program, Staff Development, Instructional Support, Family/Community Involvement, Documentation of Program Effects, and Communications) defined by 19 essential performance indicators (each scored on a 1- to 5-point scale with a set of scoreable descriptors). A list of all the performance indicators identified for the roles of the principal and the education specialist under the ALEM and comprising the final assessment frameworks is found in APPENDIX B. The complete interview frameworks display each of the role definitions, subelements, performance indicators, and scale of

scoreable descriptors that were developed and judged as appropriate measures of implementation of the administrative and instructional leadership components of the ALEM (Ellett & Wang, 1984).

The Teacher Survey consisted of all 34 performance indicators and associated descriptors for the principal and education specialist roles. Specific questions relative to each performance indicator solicited teachers' judgments about the functioning of their school principal and education specialist within the ALEM. These questions were designed to parallel the kinds of questions for each performance indicator that were included in the interview frameworks. Sample pages from the Teacher Survey form are presented in APPENDIX C.

Data Collection

All data for the study were collected during the late spring of 1983 over a five-day period. Two methods were employed. The first required that the outside interviewer collect interview data using the assessment frameworks developed for the education specialist and school principal. Each school principal and education specialist was interviewed individually. In order to collect additional ALEM implementation data and to corroborate information obtained from the principal and education specialist, two ALEM teachers were randomly selected within each for interviews. These teachers were also interviewed individually. All interviewees were informed of the nature of the pilot study and the fact that their data were contributed confidentially. Using this interview design, four interviews were held in each ALEM school--one each with the school principal and the education specialist and one with each of the two randomly selected teachers. Using only one interviewer served to reduce between-interviewer variability in the data collection procedure.

All interviews were undertaken using the interview frameworks as a systematic guide. Open-ended questions were asked which focused specific responses

for scoring each of the scoreable descriptors. Probing questions were asked when further clarification and additional explanation/evidence was needed to check a particular descriptor. The specific content of each descriptor statement was used as a basis for crediting an item. Sometimes this procedure required an observable demonstration on the part of the principal or education specialist; sometimes it required strong, verbal corroboration from the teacher being interviewed. For example, performance indicator #2 in the principal interview framework suggests that the principal should be able to identify and explain the 12 critical dimensions of the ALEM. When interviewing the principal, the interviewer would ask how many of the critical dimensions could be identified and would request an actual (though brief) explanation of each dimension identified. The set of descriptors would then be scored based on the resulting data provided by the principal. When asking a teacher about this particular item, the interviewer would accept the teacher's best judgment as to how many critical dimensions could be identified by the school principal and how many of these could be explained.

Principals and education specialists were asked to produce as much visible evidence/documentation as possible to corroborate their degree of implementation of each performance indicator. Teachers, on the other hand, were more typically asked about their knowledge of a principal's or education specialist's demonstration of the various descriptors and they were asked to provide examples of specific evidence.

For each descriptor, where sufficient evidence/documentation existed, a check mark was made on the interview form in the appropriate space in the columns to the right of each statement (see samples in APPENDIX A). When data were collected during the principal or education specialist interviews, check

marks were made in the column labeled "External". When the first teacher was interviewed, data were recorded in the column labeled "T/1". Data for the second teacher interview were recorded in the column labeled "T/2". The "T/3" column was not used in this study since only two teachers in each school were interviewed.

The Teacher Survey was administered to all ALEM teachers in each of the five participating schools. Teachers were asked to complete the survey within three days and to return their completed anonymous surveys for processing in a stamped envelope provided. Nineteen useable surveys were received from the 28 ALEM teachers (68%) in the five elementary schools.

Data Scoring and Analysis

All raw data from the interview frameworks and Teacher Surveys were keypunched as either one's or zero's for the sets of descriptors defining the various performance indicators. This allowed each indicator to be scored for each interviewee or survey respondent on a 1- to 5-point scale. If no descriptors were credited for an individual interviewee or respondent, the indicator score was equal to 1. If one descriptor was credited, the indicator score was equal to 2. If two descriptors were credited, the indicator score was equal to 3, and so on.

The sequential, hierarchical sets of descriptors were keypunched ranging from 1 to 5 based on the appropriate space checked to the right of each descriptor (scale point).

Three kinds of analyses were performed on the data: 1) Descriptive statistics for each performance indicator and instrument subscale (ALEM "role" aggregation) for the total sample and for each school, for the principal and the education specialist separately; 2) intercorrelations between instrument sub-

scales for the responses to the Teacher Survey; and 3) indices (percentages) of agreement between the external interviewer's implementation scores on the interview frameworks for the principals and education specialists and the scores from the teachers interviewed. These analyses allowed for an examination of variation in implementation levels, interrelationships between implementation scores across teachers for ALEM principals and education specialists, and the utility/potential reliability of the interview procedure as a means of collecting/corroborating program implementation data within the ALEM. Two supplemental analyses were also completed.

Results

Results from the study are summarized under four major headings. First, responses to the ALEM Program Implementation Survey for Teachers (Teacher Survey) are presented in terms of (a) a summary of teachers' perceptions of the roles played by the principals and education specialists in program implementation, and (b) the findings from a correlational analysis of the survey results for the 19 responding teachers. Next, the results from the principal and education specialist interviews are summarized. Findings from the analysis of interrater agreement between the ratings on the principal/education specialist interviews and the teacher survey are presented under the third heading. Finally, the results from supplemental analyses are discussed.

Descriptive Statistics and Comparisons: Teacher Survey

Table 1 presents a summary of means and standard deviations for the first 15 performance indicators derived from the 19 responses to the Teacher Survey. (See APPENDIX B for statements corresponding to the numbering of performance indicators). These data are for the role of the school principal as viewed by

the ALEM teachers. The indicator means ranged from a high of 4.21 (#1 -- principal's ability to identify and explain the three basic components of the ALEM) to a low of 2.71 -- principal's functioning in the area of communicating with parents and the community). Nine of the 14 indicator means reported in Table 1 exceeded 3.00, which was originally established as the score point representing an "adequate" degree of implementation of ALEM roles and responsibilities. None of the indicator means approached the highest score of 5.00, and only two exceeded 4.00. This finding suggests that teachers viewed their principals as implementing their ALEM responsibilities at an "adequate" or "above adequate" level, but that the degree of total implementation was not nearly as high as it could be.

Table 2 displays descriptive statistics for each performance indicator in the Teacher Survey for the education specialist's role. As shown in Table 2, the performance indicator means ranged from a low of 2.69 (#11 - education specialists' functioning relative to the design of staff development plans) to a high of 4.36 (#9 - education specialists' interactions with principals to discuss ALEM program implementation data). All performance indicator means except one (#11) exceeded the scale midpoint (3.00 = "adequate"). Seven indicator means exceeded 4.0, and 13 of the 19 indicator means exceeded 3.50.

An analysis of subscale scores for the Teacher Survey (administrator's role and education specialist's role) also was completed for each of the five sample schools to examine between- and within-school variability in degrees of implementation of the ALEM. These results show considerable variability in the degree to which teachers viewed their principals and education specialists as performing their administrative and instructional leadership duties and responsibilities under the ALEM. These results are presented in Tables 3 and 4. It should be noted that the scores are not directly comparable between subscales

TABLE 1

Summary of Descriptive Statistics for Performance Indicators on the Teacher Survey: School Principal's Role (n = 19 Teachers in 5 Elementary Schools)

Performance Indicator [a]	$\bar{X}$	S.D.
1.	4.21	0.85
2.	3.74	1.41
3.	2.83	1.34
4.	3.43	1.70
5.	3.57	1.28
6.	4.17	1.03
7.	2.76	0.97
8.	3.35	1.00
9.	2.71	0.99
10.	b	b
11.	2.83	0.92
12.	2.82	1.51
13.	3.78	1.26
14.	3.72	1.45
15.	3.06	1.30

Note: [a] Numbering of performance indicators corresponds with numbering in APPENDIX B.

[b] This indicator is not scored on a 1 to 5 scale.

TABLE 2
Summary of Descriptive Statistics for Performance Indicators on the Teacher Survey: Education Specialist's Role
(n = 19 Teachers in 5 Elementary Schools)

Performance Indicator[a]	$\overline{X}$	S.D.
1.	3.64	1.65
2.	3.63	1.26
3.	4.19	1.22
4.	3.13	1.30
5.	4.11	0.90
6.	3.78	1.31
7.	4.00	1.22
8.	3.89	1.23
9.	4.36	0.92
10.	3.40	1.30
11.	2.69	1.03
12.	3.18	0.95
13.	3.53	0.64
14.	4.26	0.81
15.	3.59	1.00
16.	3.39	1.04
17.	3.08	0.79
18.	4.17	1.29
19.	4.11	1.15

Note: [a]Numbering of performance indicators corresponds with numbering in APPENDIX B.

since the number of items on which they are computed varies from one subscale to the next.

Subscale Intracorrelations: Teacher Survey

Subscale scores for the Teacher Survey were developed for the set of 15 performance indicators reflecting the role of the school principal and the 19 performance indicators reflecting the role of the education specialist. Pearson product-moment correlation coefficients were computed using subscale scores, with teachers as the unit of analysis, to examine the direction and strength of relationship between subscales.

Table 5 displays intracorrelations between the three subscales of the Teacher Survey: Principal's Role. All correlations were statistically significant ($p < .01$), positive, and ranged from a low of $r=.60$ (Program Supervision/Instructional Leadership) to a high of $r=.75$ (Instructional Leadership/Program Management). These correlations are considered moderately high and demonstrate from 36% to 56% common variation among subscale scores. Considered collectively, these results suggest that principals who were viewed positively in their functioning under the ALEM by teachers in one program area generally were viewed positively in other program areas.

Table 6 displays the results of subscale intercorrelations for the Teacher Survey responses for the education specialist's role. Correlations varied from a high of $r=.86$ (Communications/Instructional Support) to a low of $r=.04$ (Family Community Involvement/Documentation of Program Effects). With two exceptions, all correlations between subscales were positive. The correlations ranged from demonstrating rather strong relationships between subscales to little or no relationship at all. Because of the rather small sample size, some of the more moderate correlations (e.g., approaching .40) were not statistically significant ($p < .05$). These findings show generally moderate to rather high intracorre-

TABLE 3

Summary of Descriptive Statistics from the
Teacher Survey by School and Subscale:
School Principal's Role
(n = 19 Teachers in 5 Elementary Schools)

School	Subscale							
	Instructional Leadership		Program Supervision		Communications		Program Organization/ Management/Support	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
A	9 67	(6.66)	7.50	(3.54)	5.33	(3.06)	12.33	(8.39)
B	12.75	(3.20)	8.00	(1 00)	9.00	(2.16)	18.25	(6.02)
C	16.33	(2.52)	7.00	(4.36)	9.00	(5.00)	15.33	(6.11)
D	11.00	(5.20)	3.33	(1.53)	7.33	(5.51)	12.67	(5 13)
E	13.80	(3.19)	5.20	(3.11)	6.80	(1.64)	15.60	(6.31)

TABLE 4

Summary of Descriptive Statistics from the
Teacher Survey by School and Subscale:
Education Specialist's Role
(n = 19 Teachers in 5 Elementary Schools)

	School									
	A		B		C		D		E	
Subscale	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Training	7.00	(4.36)	14.25	(6.24)	16.00	(6.93)	13.33	(4.73)	10.60	(6.11)
Curriculum Planning/Updating	9.00	(2.65)	12.50	(3.70)	9.67	(4.73)	8.67	(3.21)	10.00	(5.15)
Program Monitoring	7.00	(2.00)	8.00	(4.00)	6.67	(4.16)	5.00	(2.83)	6.20	(2.77)
Staff Development	8.67	(2.52)	12.75	(2.63)	16.00	(5.29)	5.50	(3.54)	9.80	(3.83)
Instructional Support	11.67	(0.58)	11.75	(1.89)	10.67	(4.51)	9.67	(3.21)	9.80	(3.96)
Family/Community Involvement	3.00	(1.41)	3.00	(1.00)	4.00	(0.00)	3.00	(0.00)	3.00	(0.00)
Documentation of Program Effects	4.33	(1.15)	4.25	(1.50)	4.00	(1.73)	3.67	(1.53)	4.25	(1.50)
Communications	4.33	(0.58)	4.50	(1.00)	4.00	(1.73)	3.00	(1.00)	4.20	(1.30)

TABLE 5

Summary of Intercorrelations Between Subscales of the Teacher Survey: School Principal's Role (n = 19 Teachers in 5 Elementary Schools)

	Subscale		
Subscale	Instructional Leadership	Program Supervision	Communications
Program Supervision	.60**		
Communications	.65**	.61**	
Program Management	.75***	.74***	.69***

**p < 01
***p<.0001

TABLE 6

Summary of Intercorrelations Between Subscales
of the Teacher Survey: Education
Specialist's Role
(n = 19 Teachers in 5 Elementary Schools)

Subscale

Subscale	Training	Curriculum Planning/ Updating	Program Monitoring	Staff Development	Instructional Support	Family/ Community Involvement	Documentation of Program Effects
Curriculum Planning/ Updating	.55**						
Program Monitoring	.36	.48					
Staff Development	.56*	.59**	.62**				
Instructional Support	.50*	.83***	.62**	.57**			
Family/ Community Involvement	.67*	-.16	37	.45	.19		
Documentation of Program Effects	.39	.73***	.52*	.30	.75***	.04	
Communications	.39	.83***	.67**	.66**	.86***	-.05	.79***

*p<.05
**p<.01
***p<.001

lations between subscales of the Teacher Survey for the education specialist's role. As with the findings for the principal's role, they suggest that education specialists who were viewed by teachers as positively performing their role in one program area, generally were viewed as positively performing in many other program areas.

Descriptive Statistics: Implementation Interviews for Principals and Education Specialists

Individual item and subscale scores were computed for the implementation interviews for the principal and education specialist from each school. Scores were derived for each performance indicator by adding the scores for the two teachers and either the principal or the education specialist interviewed in each school. The maximum possible raw score for a given indicator on either interview instrument was 15.00 (3 interviews X 5).

For the school principals, total ALEM implementation scores between schools ranged considerably -- from 113 to 181 with a maximum possible total score of 225 (15 indicators X 3 interviewees X 5 = 225). When converted to percentages of the maximum possible total score, these implementation scores ranged from 50.2% to 80.4%. For education specialists, the total ALEM implementation scores between schools ranged from 228 (80% of the maximum possible score of 285) to 275 (96.5% of the maximum possible total score of 285).

When considered collectively, these results suggest higher overall degrees of implementation in the sample schools for the education specialists than for the school principals. More variation in scores also was evident among principals than among education specialists.

Interrater Agreement Analyses: Implementation Interviews

Interrater agreement analyses of the interview data were undertaken to check on the extent of agreement between the external interviewer's recording of

information from the ALEM principals and education specialists and the information received from the two randomly selected teachers within each school. An index of agreement was constructed using the scale midpoint for each indicator (3 = "adequate" level of implementation) as a recommended minimum implementation level. Therefore, the agreement index of concern was the number (and percentage) of scores for a particular indicator that met or exceeded a score of 3.00. This index was used because of the "pilot" nature of the study and the instruments, the difficulty in obtaining high indices of exact agreement in new interview settings, and the belief that corroborating implementation at or exceeding the minimum level of implementation was the most important concern.

Scores tabulated for each indicator were converted to agreement scores. Only raw scores which were 3.00 or greater were considered in computing these agreement scores. If only one of three scores met or exceeded the minimum level (3.00), the performance indicator was scored as 0.00. If two of the three scores met or exceeded the minimum level, the performance indicator was scored as 67%. If all three of the scores met or exceeded the minimum level, the performance indicator was scored as 100%. Data for each principal and education specialist were scored in this manner and a percentage of agreement at or exceeding the minimum level for each performance indicator was computed across all five ALEM schools.

Agreement percentages for the performance indicators ranged from 0% (principal's understanding of key role responsibilities of program staff) to 100% (principal's maintenance of a master schedule which reflects ALEM requirements, and principal's performance in allocating and supplying instructional materials). Agreement percentages (means) for each subscale (Instructional Leadership, Communications, Program Organization/Management/Support) were 62%, 67%,

and 70%, respectively. The total agreement percentage (grand mean percentage) for the entire interview procedure for principals was 66%.

For the education specialist interview instrument, performance indicator agreement percentages ranged from 100% (for 8 of the 19 indicators) to 42% the education specialist's involvement in planning pre-service training for ALEM staff and volunteers). Mean percentages of agreement for the various subscales were: Pre-Service Training (73%); Curriculum Planning/Updating (86%); Monitoring Program (96%); Staff Development (91%); Instructional Support (90%); Family/Community Involvement (71%); Documentation of Program Effects (100%); and Communications (100%). The grand mean percentage of agreement for the complete interview instrument for education specialists was 86%. These results suggest that agreement percentages "at or exceeding the minimum performance level" were greater for the education specialist in the sample schools than for the school principals.

Supplemental Analyses

Two supplemental analyses of the ALEM program implementation data were undertaken to: 1) explore relationships between teachers' views of principals' and educational specialists' performance of their ALEM-related tasks; and 2) compare schools in a gross ranking procedure across the four implementation measures utilized in the study.

Table 7 displays the intercorrelations between the Teacher Survey subscale scores for the principal and education specialist performance indicators. All of the correlations were positive in direction and ranged from rather low ($r=.18$) to moderately high ($r=.73$). For the table total, 59% of the possible intercorrelations were statistically significant ($p < .05$), with six other correlations approaching significance. Considered as a whole, the results in Table 7 suggest that the degree to which school principals were viewed by teachers as

TABLE 7

Summary of Intercorrelations Between Subscales
of the Teacher Survey for the Principal's Role
and the Education Specialist's Role
(n = 19 teachers in 5 ALEM schools)

	Education Special Subscales							
Principal Subscales	Training	Curriculum Planning	Program Monitoring	Staff Development	Instructional Support	Family/ Community Involvement	Documentation of Program Effects	Communications
Instructional Leadership	.46*	.43	.18	.30	.46*	.19	.36	.46*
Program Supervision	.40	.43	.72***	.57*	.66**	.43	.43	.67**
Communications	.63**	.52*	.51*	.43	.63**	.33	.46*	60*
Program Organization/ Management/Support	.65***	.71***	.47*	.47*	.73***	.21	.34	.64**

* p< 05
** p< 01
*** p<.001

implementing their ALEM-related job responsibilities was positively and significantly related to the degree to which the education specialists were viewed as performing their roles in the ALEM.

In order to examine the consistency in rank of the five sample schools across all four implementation measures, a gross index of rank was computed for each measure for each school. Each school was rank ordered in terms of the grand mean scores for the principal and education specialist interview procedures and total scores for the forms of the Teacher Survey. The results showed that no strong "winners" appeared across all four measures. However, of eight of the possible first- or second-place rankings across the four measures, either of two schools appeared five times, with four of these rankings resulting from the Teacher Survey data. These results, while certainly not definitive, can be interpreted as showing the beginnings of an implementation level trend in the ALEM's administrative and instructional leadership components in these five sample schools.

Discussion, Implications, and Recommendations

The process of developing and pilot testing a set of assessment procedures to measure implementation of administrative components of the ALEM yielded several interesting and important results. To date, implementation levels in the ALEM have been assessed by focusing on teacher and student behaviors and classroom level variables. The implementation measures reported here targeted the job duties, roles and responsibilities of the two key administrative and instructional leadership personnel in the ALEM system...the school principal and the education specialist. Both of these individuals are assumed to be important administrative and support elements in the degree and success of ALEM

implementation. Recent research on school improvement provides much evidence that implementation of administrative and instructional leadership structures, are important elements of school productivity (Block, 1983).

Before this study, no serious effort had been put forth to design and pilot a system for measuring levels of ALEM implementation with the school principal and the educational specialist as the objects of measurement. The job analysis procedure utilized (See process model in Figure 1) proved to be quite useful in developing and operationalizing a system for collecting data relative to critical ALEM performance indicators for these two key educators. A similar methodology has been successfully utilized in developing measures to assess performance competencies of school administrators (Ellett & Payne, 1978) and beginning teachers (Capie, Anderson, Johnson, Ellett, 1980). To the authors knowledge, the methodology reported here has not been previously utilized to develop measures of program implementation. The procedures not only served to identify critical performance indicators for the roles of the principal and the education specialist in the ALEM, but they also were used to place the performance indicators in a scoreable framework in both interview and survey formats.

Analyses of the interview framework data across the five pilot schools indicated that these procedures are, for the most part, sensitive to variation in levels of ALEM implementation. As with all interview procedures, an element of subjectivity exists in deciding whether a particular verbal response or other documentation produced by an interviewee should be "counted" as evidence of program implementation. If the interview procedures are used on a large scale basis, a training program for interviewers to standardize questions and scoreable evidence for the job descriptors would be required. Focused training of interviewers and perhaps the development of a catalogue of evidence for each

performance indicator and scoreable descriptor can serve to control possible sources of unreliability when using interview methodologies like those used in this study.

The agreement data reported for the interview frameworks is important for several reasons. First, the findings suggest that agreement rates were generally higher for the education specialists than for the school principals. Several interpretations of this finding can be made. However, the most useful interpretation may have to do with the "visibility" of the education specialist in the ALEM school environment. Teachers may be able to more reliably report on aspects of the specialist's functioning than the school principal's functioning due to the specialist's more intensive involvement (and thus visibility) in the ALEM program. The interrater agreement rates for the interview data established in this pilot study provide some support for this interpretation.

Secondly, the procedure used to establish agreement percentages is important when considering the notion of "minimum" levels of implementation in the ALEM and similar programs (setting program standards). Traditional approaches to establishing interrater agreement percentages for observers or interviewers are usually estimates of "exact" agreement. Exact agreement procedures may not always be a useful index for evaluation procedures when program implementation is measured. What seems important from the evaluation perspective, is the extent to which agreement exists at or above established minimum performance standards. The reliability concern in this context, is program implementation decision making. This seems an important concern because three sources of data (principal, teacher #1 and teacher #2) could all judge a performance indicator at or above a level of 3.00 (minimum level) with 0% exact agreement (e.g., principal = 3; teacher # 1 = 4; teacher #2 = 5); but 100% agreement relative to the established minimum performance level (3.00).

With this view in mind, the results of this pilot study suggest that, for the most part, minimum program implementation levels were being met. This was particularly the case for functioning of the ALEM education specialists. In establishing standards for the ALEM and similar programs, what seems important is whether the resultant program implementation data show consistency at or exceeding the recommended program performance standards. Disagreement above or below the established performance standards does not seem to be a matter of concern in evaluating levels of implementation relative to a standard, though it may well be important from the "conclusion-oriented" research perspective (Popham, 1975). More refined studies of these issues seem needed.

Intracorrelations between subscales of the school principal and education specialist Teacher Survey data suggested that the quality of performance in one job area was positively associated with many other job areas. This finding suggests that principals and education specialists who are viewed by ALEM teachers as high performers in some program areas are also viewed as high performers in other program areas. Additionally, intercorrelations between subscales of the two instruments suggest that high performance of education specialists (from teachers' perspectives) is associated with high performance of school principals. It would be interesting in future studies to examine the relationship between ALEM classroom level implementation measures with those used in this study. Linkages between implementation of administrative and instructional leadership support roles and implementation of classroom behaviors of teachers and students in the ALEM could be established.

Future studies are needed on the measures developed and piloted in this investigation. The instruments and procedures need to be field tested in a larger context to see if the findings reported here can be replicated. It might prove useful to establish the concurrent validity of the implementation measures and procedures used by comparing "new" ALEM school site to ALEM school sites

that have been implementing the model for a number of years.

If the measures used in this study could be administered to a much larger sample of ALEM school sites, more could be learned about the relationship between and usefulness of teacher surveys and interviews as program implementation methodologies. This is a trying task, since school means should be used as the units of analysis in these studies and a reasonable number of schools would have to be included to make the findings statistically robust.

Finally, some attention should be given in future research to examine relationships between levels of implementation with the measures piloted in this study and learner outcomes. Ideally, the evidence from such criterion-related validity studies would show that schools profiled by high implementation of ALEM administrative roles/responsibilities are providing optimum learning environments for children and are especially productive in terms of learner outcomes. Tying program implementation variables to learner outcomes in innovative educational programs like the ALEM should be an important, ongoing concern in future evaluation research studies in education.

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APPENDIX A

Sample Performance Indicators
and Scoreable Descriptors for
the Principal and Education
Specialist Implementation
Measures in the ALEM

Performance Indicator 2: Explain the data base used to design/develop staff development plans for teachers.

Scale of Descriptors

	ALEM SCHOOL PRINCIPAL			
	External	T/1	T/2	T/3
1. No systematic data base or printout is evident.	____	____	____	____
2. A computer printout is evident (available) but no knowledge of content is demonstrated.	____	____	____	____
3. A computer printout is evident (available) and specific content can be briefly explained.	____	____	____	____
4. Ways in which data are used to develop specific staff development plans can be explained in detail.	____	____	____	____
5. In addition to #4 above, the manner in which supplemental information is used to design/develop staff development priorities can be explained.	____	____	____	____

*If the Implementation Assessment Battery for Adaptive Instruction is used to evaluate performance of teachers, a score of "1" should be given.

Evidence/Rationale: _____

Instructional Leadership Role

B. Staff Development

Performance Indicator 1: Plan/coordinate staff development activities for teachers.

Descriptors	ALEM External	SCHOOL T/1	PRINCIPAL T/2	T/3
a) Individualized ALEM staff development plans can be identified.	___	___	___	___
b) Components of individual staff development plans can be explained or elaborated in terms of function/use/nature of activities.	___	___	___	___
c) Most recent, required staff development plans are available for each ALEM teacher.	___	___	___	___
d) Staff development responsibilities of the education specialist can be explained in detail.	___	___	___	___

Evidence/Rationale: _____

_____

_____

_____

_____

_____

HIERARCHICAL, SEQUENTIAL METHODOLOGY FOR DESCRIPTORS

I Pre-service Training Role

A. Planning

Performance Indicator 1: Plans pre-service training for ALEM program staff and volunteers.

Scale of Descriptors

	ALEM Education Specialist			
	External	T/1	T/2	T/3
1. No pre-service planning has occurred.	___	___	___	___
2. Pre-service planning has been done; but no written plans are available.	___	___	___	___
3. Written pre-service plans are evident; but are incomplete.	___	___	___	___
4. Written pre-service plans specify objectives, activities/materials, and responsible persons.	___	___	___	___
5. In addition to #4, written plans specify one or more ways to monitor trainee progress toward objectives.	___	___	___	___

Evidence/Rationale: _____

B. Implementing

Performance Indicator 1: The content of pre-service training centers on essential elements of the ALEM.

Descriptors

	ALEM Education Specialist External	T/1	T/2	T/3
a) Pre-service training includes an explanation of the rationale and design for the ALEM.	____	____	____	____
b) Pre-service training includes an explanation of the major components of the ALEM.	____	____	____	____
c) Pre-service training includes an explanation of all 12 critical dimensions of the ALEM.	____	____	____	____
d) Pre-service training results in an individualized staff development plan for each teacher.	____	____	____	____

Evidence/Rationale: _____

APPENDIX B

List of Essential Performance
Indicators for the Principal
and Education Specialist
Roles under the ALEM

ESSENTIAL PERFORMANCE INDICATORS FOR THE THREE ROLES OF THE SCHOOL PRINCIPAL UNDER THE ALEM

I. Instructional Leadership

Performance Indicators

1. Identify and explain the three basic components of the ALEM.
2. Identify and explain the 12 critical dimensions of the ALEM.
3. Plans/coordinates staff development activities for teachers.
4. Explain the data base used to design/develop staff development plans for teachers.
5. Monitors program implementation through classroom observation.
6. Periodically meets with the education specialist to discuss program implementation.

II. Communications

7. Establishes a network or structure for communicating with ALEM staff.
8. Communications are effective.
9. Establishes a network or structure for communicating about the ALEM to parents, the community, and others.

III. Program Organization/Management/Support

10. Maintains a master schedule for staff which reflects ALEM requirements.
11. Implements staff development program(s).
12. Understands key role responsibilities of ALEM program staff.
13. Allocates and supplies instructional materials.
14. Allocates and supplies human resources.
15. Implements a process for the identification and placement of special needs children.

ESSENTIAL PERFORMANCE INDICATORS FOR THE EIGHT ROLES
OF THE EDUCATION SPECIALIST UNDER THE ALEM

I. Pre-Service Training

Performance Indicators

1. Plans pre-service training for ALEM program staff and volunteers.
2. The content of pre-service training centers on essential elements of the ALEM.
3. In-service training includes essential activities.
4. Assesses effectiveness of pre-service training.

II. Curriculum Planning/Updating

5. Analyzes basic skills curriculum to determine degree of individualization.
6. Coordinates the individualization of the curriculum.
7. Facilitates the individualization of the curriculum by identifying supplemental materials and learning activities.

III. Monitoring Program

8. Monitors program implementation through classroom observation.
9. Periodically meets with the principal to discuss program implementation.

IV. Staff Development

10. Uses Implementation Assessment Batter for Adaptive Instruction as a basis for planning.
11. Designs individualized staff development plans.
12. Conducts in-service training activities.
13. Assesses effectiveness of in-service activities.

V. Instructional Support

14. Diagnoses learning needs of individual students.
15. Develops instructional plans with teachers.
16. Provides/coordinates instructional resources and services which meet students' needs.

VI. Family/Community Involvement

17. Plans/participates in family and community involvement activities.

VII. Documentation of Program Effects

18. Coordinates and implements data collection activities.

VIII. Communications

19. Maintains structure for communicating with ALEM staff.

APPENDIX C

Sample Pages from the Teacher Survey
for Role of the Principal and the
Education Specialist

PART I

Please answer each item by marking the appropriate space(s). If uncertain, leave the item blank.

1. If my principal was asked to identify and explain the three basic components of the ALEM, he/she could (check only one)

   ____ not directly identify any ALEM component.

   ____ directly identify one component.

   ____ directly identify two components and briefly explain them.

   ____ directly identify all three ALEM components and briefly explain them.

   ____ directly identify all three ALEM components and explain each in detail.

2. If my principal was asked to identify and explain the twelve critical dimensions of the ALEM, he/she could (check only one)

   ____ identify fewer than three critical dimensions.

   ____ identify and briefly explain three or more critical dimensions.

   ____ identify and briefly explain six or more critical dimensions.

   ____ identify and briefly explain nine or more critical dimensions.

   ____ identify and briefly explain twelve or more critical dimensions.

3. In planning/coordinating staff development activities for teachers, my school principal (check only one)

   ____ has knowledge of individual staff development plans.

   ____ can explain individual staff development plans in terms of function/use and nature of activities.

   ____ maintains the most recent, required staff development plans for each teacher.

   ____ can explain staff development responsibilities of the education specialist in detail.

4. In designing staff development plans for teachers my principal (check only one)

   ____ does not maintain any systematic data base or printout.

____ maintains a computer printout but does not understand its content.

____ maintains a computer printout and can explain its content.

____ can explain in detail ways in which data are used to develop specific staff development plans.

____ can explain ways in which data are used to develop specific staff development plans and the manner in which staff development priorities are established.

5. In monitoring ALEM program implementation in the classroom my principal (check all that apply)

____ systematically monitors the learning environment (learning centers, physical arrangements of the classroom, etc.).

____ systematically monitors instructional procedures/activities.

____ assesses pupil progress toward learning objectives (spot checks classroom records or profile charts).

____ discusses results of classroom observations with teachers and/or paraprofessionals.

6. When my principal meets with the educational specialist to discuss program implementation (check all that apply)

____ formal and informal implementation data are discussed.

____ specific strengths and weaknesses at the classroom level are identified.

____ results of major staff development activities are discussed.

____ plans for continuing and new staff development activities are made.

7. In establishing a network or structure for communicating with ALEM staff my principal (check all that apply)

____ maintains in written form rules/procedures/policies for communications.

____ maintains a file of written communications (memos, letters, documents, etc.).

____ periodically holds informal meetings with staff.

____ holds regularly scheduled meetings with instructional staff.

PART II

Please answer each item by marking the appropriate space(s). If uncertain, leave the item blank.

1. In planning pre-service training for ALEM program staff and volunteers, the education specialist in this school (check only one).

   ____ does not do pre-service planning.

   ____ does pre-service planning, but does not develop written plans.

   ____ develops written pre-service plans, but these are somewhat incomplete.

   ____ develops written pre-service plans which specify objectives, activities/materials and responsible persons.

   ____ develops written pre-service plans which specify objectives, activities/materials, responsible persons and one or more ways to monitor trainee progress toward objectives.

2. In conducting pre-servic training the education specialist in this school (check all that apply)

   ____ explains the rationale and design of the ALEM program.

   ____ explains the major components of the ALEM program.

   ____ explains all twelve critical dimensions of the ALEM program.

   ____ develops an individualized staff development program for each teache..

3. During in-service training the education specialist in this school. (check all that apply)

   ____ uses large group discussion about essential elements of the AL program.

   ____ explains essential elements of the ALEM program in detail.

   ____ applies elements of the ALEM program to teacher's classrooms.

   ____ includes a "closing session" to synthesize information about implementation of the ALEM program.