DOCUMENT RESUME

ED 265 165 TM 850 496

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TITLE Factors Associated with Differences in Patterns of Program Implementation: A Three Year Study.
INSTITUTION Pittsburgh Univ., Pa. Learning Research and Development Center.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.; Special Education Programs (ED/OSERS), Washington, DC.
PUB DATE Apr 85
NOTE 29p.; Paper presented at the Annual Meeting of the American Educational Research Association (69th, Chicago, IL, March 31-April 4, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Analysis of Variance; Correlation; *Educational Assessment; Educational Environment; *Educational Innovation; Elementary Education; Elementary School Teachers; Item Analysis; Longitudinal Studies; *Models; Program Effectiveness; Program Evaluation; *Program Implementation; *Staff Development; *Teaching Skills
IDENTIFIERS *Adaptive Learning Environments Model; Project Follow Through

ABSTRACT

Purposes of this study were: (1) to examine patterns of implementation of an innovative educational program with a built-in staff development component over a period of three years; (2) to compare patterns of implementation of the Adaptive Learning Environments Model's (ALEM) three types of teaching skills, including generic, adaptive, and program specific; and (3) to examine site-to-site differences in patterns of program implementation over time. Data for the study were obtained from classrooms in four school districts which implemented the ALEM as the core instructional program in grades K through 3, in conjunction with participation in the National Follow Through Program. Sites varied in ethnocultural, socioeconomic, and geographic characteristics. Teachers' classroom implementation was measured by administration of the Implementation Assessment Battery for Adaptive Instruction (IABAI). Results, obtained using analyses of variance, item analysis, and correlational analysis, were summarized to show few marked differences in patterns of change over time for the three types of teaching skills. When ample support was provided, improvements in implementation were likely to result; the absence of or inadequacy of support, however, lead to stagnation or decrement of teaching skills. (LMO)

Factors Associated with Differences in Patterns of Program Implementation A Three Year Study

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The research reported herein was supported by the Learning Research and Development Center, funded in part as a research and development center by funds from the National Institute of Education, the National Follow Through Program, and the U. S. Office of Special Education. The opinions expressed do not necessarily reflect the position or policy of these agencies, and no official endorsement should be inferred. The authors thank Mary Kay Freilino and her provision of resources for the review of literature.

Paper presented at the Annual Meeting the American Educational Research Association, Chicago, April 1985.

Factors associated with Differences in Patterns of Program Implementation: A Three Year Study

The successful implementation of an innovative educational program in a school is a difficult task, requiring commitment and effort on the part of administrators and teachers alike. In a study of federally funded projects, Berman & McLaughlin (1977) found that over half the innovative programs were either aborted soon after adoption or discontinued after a relatively short time. District- and school-level administrative support, especially by the school principal, was crucial for successful implementation. However, the bottom line is the classroom teacher, who determines whether and to what degree the innovative practice is actually put in place.

Research on school change has identified a number of factors which are related to teachers' willingness to implement an innovative program. These factors include clarity of the program's goals and methods, congruence of these goals and methods with teachers' goals, teachers' perception of their own efficacy and that of the program for bringing about important outcomes in students, and the provision of appropriate training (Baker & Showers, 1984; Berman & McLaughlin, 1978; Doyle & Ponder, 1977-1978; McLaughlin & Marsh, 1979; Showers, 1983).

Even if all of these factors are present, successful classroom implementation of an innovative program is not an all-or-none phenomenon, especially if the program is complex and requires wide-ranging changes in teacher behavior. Hall and his collaborators (Hall & Loucks, 1979; Hall, Loucks, Rutherford, & Newlove, 1975) propose that teachers go through a sequence of stages of concern about and use of an innovation, progressing gradually from concerns with the mechanics of "how to do it" to impact-oriented concerns, and from piecemeal application of components to their integrated use. Wang and her colleagues have documented changes in degree of

implementation of an innovative adaptive instruction program over the course of a school year and showed that changes in implementation were closely related to the type and amount of training support available to the teachers (Wang & Gennari, 1983; Wang, Vaughan, & Dytman, 1985).

Moreover, these kinds of long-term changes are likely to interact with the cyclical nature of the school year. Studies of students' standardized achievement test scores have consistently found an increase in average achievement from fall to spring, followed by a decrease over the summer from spring to fall (Anderson, 1984; Gordon, 1984). Since teachers, like students, must readjust to school routines after the long summer vacation, and, in most cases, adjust to a new set of students, it is likely that a similar effect occurs in measures of teacher performance.

Despite considerable evidence that long-term changes in implementation of innovative programs are to be expected, especially in programs that include systematic, on-going training support, few studies have measured such changes over more than one year. Therefore, a major goal of this study was to examine patterns of implementation of an innovative educational program with a built-in staff development component over a period of three years, as well as from fall to spring within each year, and from each spring to the following fall.

The program involved in the study is the Adaptive Learning Environments Model (ALEM), an educational program designed to make instructional provisions that are adaptive to student differences in regular classes (Wang, 1980). The ALEM has been implemented in a variety of settings as a general education program, a mainstreaming program for mildly handicapped students, and/or an alternative model for compensatory education programs such as the National Follow Through Program and Chapter I. The effectiveness of the ALEM in serving diverse groups of students has been demonstrated in terms of improvement in classroom processes and achievement

gains (Wang, Gennari, & Waxman, 1985; Wang, Peverly, & Randolph, 1984; Wang & Walberg, 1983). In addition, the ALEM has been validated by the Joint Dissemination Review Panel of the Department of Education (Educational Programs That Work, 1980).

Since 1980, the first year of data collection for this study, the ALEM has incorporated a data-based staff development component. This component includes procedures for monitoring and measuring degree of program implementation, then using the results to design and deliver individualized training to teachers. Detailed descriptions of the staff development component and evidence of its effectiveness may be found in Wang & Gennari (1983) and Wang, Vaughan, & Dytman (1985).

The ALEM, like any other complex innovative program, includes features which vary in "newness" for teachers. Many of the teaching skills required for ALEM implementation are ones common to effective teaching in any setting, e.g., explaining, demonstrating, motivating. We refer to these skills as generic teaching skills. Still other skills required by the ALEM are common to all adaptive instruction programs, though not (or to a lesser degree) to conventional teaching, e.g., prescribing individual assignments to students based on diagnosis of their learning needs. We have called these skills adaptive teaching skills. Finally, the ALEM requires certain unique teaching skills, e.g., use of a management system called the Student Self-Scheduling System. These kinds of skills may be called program-specific teaching skills. Even excellent teachers in traditional programs, i.e., teachers with high levels of generic skills, are likely to experience difficulty in learning and using new (adaptive or program-specific) techniques. Moreover, Howey (1983) has suggested that, unless teachers are supported in the use of such techniques, they are likely to revert to older more familiar ones. Due to factors such as these, pattern of program implementation may vary from one type of skill to another. A second purpose of this study, therefore, was to compare patterns of implementation of the ALEM's three types of teaching skills: generic,

adaptive, and program-specific.

Finally, the Rand studies of school change showed that innovative programs were more likely to be adopted and continued by schools if their implementation was adapted to meet the needs of the particular site. Consequently, it seemed reasonable to expect variations in ALEM implementation from one site to another. A third purpose of this study, therefore, was to examine site-to-site differences in patterns of program implementation over time and for each of the three types of teaching skill.

In summary, the research questions addressed by this study were:

1. To what degree and in what ways does implementation of the ALEM vary over a period of three years and, within years, from fall to winter or spring?
2. How do levels and patterns of implementation differ for generic, adaptive, and program-specific teaching skills?
3. How do patterns of implementation vary from one site to another?

Method and Procedure

Data Source

The data for this study were obtained from classrooms in four school districts (hereafter referred to as Sites A, B, C, and D) which implemented the ALEM as the core instructional program in Grades K through 3 in conjunction with the districts' participation in the National Follow Through Program. While selected components of the ALEM had been implemented in some of the classes for nearly 10 years, systematic incorporation of all the program features began in September, 1979, one year prior to the first year of the present study.

The sites varied in ethno-cultural, socioeconomic, and geographic

characteristics. Site A is located in a large, midwestern city, where the ALEM was implemented in two inner-city schools. Site B is part of a small, white, midwestern farming community in which all three schools implemented the ALEM. Site C is in a large, sparsely populated, mainly white, rural Appalachian county where the ALEM was implemented in three schools. Site D is located in a medium-sized city where the ALEM was implemented in three racially mixed schools.

Two criteria were used to select classrooms (i.e., teachers) for the study. The first was continuous implementation of the ALEM in the teacher's class over the 1980-81, 1981-82, and 1982-83 school years. The second criterion was availability of data from at least two implementation assessments for each year. These criteria were met by seven teachers at Site A, 11 teachers at Site B, 10 teachers at Site C, and 14 teachers at Site D, yielding a total sample of 42 teachers. All but one of the teachers had had two or more years of experience in implementing the ALEM prior to 1980-81.

Instrumentation

Teachers' classroom implementation was measured by administration of a battery designed to measure performance indicators of skills considered critical to effective implementation of the ALEM, the Implementation Assessment Battery for Adaptive Instruction (IABAI). The battery includes classroom observation forms for direct assessment of teacher and student behavior, checklists for assessment of classroom design, instructional materials, and classroom records, and student and teacher interviews for assessment of less observable program features (e.g. teachers' knowledge of student learning styles). For additional information about the battery's content, administration, and validation, see Wang, Catalano, & Gromoll (1983).

The number of performance indicators (items) in the battery was 96 in the form used in 1980-81 and 1981-82; nine items were added in a 1982-83 revision for a total of 105 performance indicators. In order to assess implementation of generic, adaptive, and program-specific teaching skills, the 105 performance indicators were independently sorted by two trained raters into sets corresponding to the three skills categories. The initial percentage of agreement between the raters was 71 percent; differences were resolved by discussion. Of the 105 items, 49 were identified as generic, 32 as adaptive, and 24 as program-specific.

Each performance indicator (item) yields a score of pass (1) or fail (0). Teachers' scores in each skill category were determined by adding across the items in that category. A total score, the sum of all item scores, was also calculated for each teacher. Since the number of items per skill category varied, raw scores were converted to percentages to permit comparisons.

Design and Analysis

Trained site personnel administered the battery at least twice in each of the three years of the study. All sites collected data in the fall of each year (the fall round). However, some sites collected degree-of-implementation data again in winter only, some in spring only, and others in both winter and spring. In order to provide comparable data for all sites across all three years, winter and spring scores were combined and referred to as the "winter/spring round." The combination is justified by the fact that studies of ALEM implementation have consistently found few differences between winter and spring scores (Wang, 1981, 1982, 1983a, 1983b, 1984).

Analysis of variance was used to assess differences in degree of implementation as a function of year (3 levels), round (2 levels), and site (4 levels). Separate

analyses were run for generic, adaptive, program-specific, and total scores. Information about differences in levels and patterns of implementation of the three types of teaching skills was obtained by comparing the results of the analyses. In addition, item analyses of the 1980-81 and 1982-83 data sets were performed to identify teaching skills which were particularly difficult for teachers to implement in one or both of those years.

Correlational analyses were conducted in order to assess consistency of teaching skills within individual teachers. To measure consistency over time, all intercorrelations of the same skills at two different points in time were computed. To assess consistency among the three skill categories, correlations among generic, adaptive, and program-specific scores were computed at each measurement point. For the correlational analyses, scores of teachers at each site were first converted to standard scores in order to control for differences in site means and variances. The level of significance for all analyses was set at .05.

Results and Discussion

The results of the analyses of variance, the item analyses, and the correlational analyses are discussed below in relation to the study's three research questions.

Variations in Implementation over Time

The results of the analyses of variance of total, generic, adaptive, and program-specific scores are summarized in Table 1. Changes over time are indicated by the Year, Round, and Year x Round effects. The nature and direction of changes over time are displayed in Figure 1, which shows the percentage mean level of implementation of indicators of each type of teaching skill in fall and in winter/spring of each year.

The Year effect was significant in the analyses of adaptive and program-specific but not generic skills. The figure indicates that this effect reflects an increase in adaptive and program-specific means over the years, while generic means remained approximately the same. The Round effect, significant in all analyses, appears in the figure as the expected cyclical effect: In all three skill categories, mean levels of implementation increased from fall to winter/spring within each year, then decreased between winter/spring and the following fall. However, the cyclical effect decreased over the three years, as indicated by the significant Year x Round effect in all analyses. Figure 1 shows that, in each year, implementation of all types of skills began at a higher mean level than the previous fall, then tended to reach approximately the same level in winter/spring.

The fact that the mean level of adaptive and program-specific, but not generic, skills increased over the years is not surprising. Studies have shown that the complex skills which contribute to effective teaching in all educational settings -- skills such as explaining, questioning, and demonstrating -- are not likely to improve over time in experienced teachers without intensive training, e.g., coaching (Joyce & Showers, 1982; Rosenshine, 1983; Showers, 1983). On the other hand, provision of systematic, data-based staff development activities, incorporated in the ALEM from fall, 1980, can be expected to -- and did -- improve implementation of the program's relatively novel features. The finding of significant changes in levels of implementation of adaptive and program-specific skills, even in teachers with considerable experience in implementing the ALEM, provides support for Hall's model of teachers' long-term, gradual adaptation to a new program.

The cyclical Round effect was present in all skill categories, thus demonstrating that both familiar and novel teaching skills tended to "drop" in fall and to require a certain amount of time to become re-established. Perhaps this is not so surprising; at the start of a school year, both teachers and students must

readjust their behavior after a long vacation, and must learn to accommodate to one another and to the classroom rules. Such major adjustments could well disrupt the exercise of even highly practiced teaching skills. After the teacher and class have settled into a routine, by late fall or early winter, the skills can be expected to return to previous, or even higher, levels.

Perhaps the clearest demonstration of the effectiveness of systematic, data-based staff development is the decrease in the cyclical winter/spring-to-fall "drop" over the years in all skill categories. Though the mean level of implementation reached in winter/spring remained approximately the same, the data-based training support provided to teachers, seemed to enable them to get the program underway progressively more quickly each fall.

Despite systematic changes in mean level of implementation over time, few of the correlations computed between measures of the same skill at different points in time were significantly different from zero, especially in the case of adaptive and program-specific skills. That is, individual teachers who, compared with others at the same site, were relatively "high" (or "low") in a given skill category at one measurement period did not necessarily remain "high" (or "low") at another. This result is probably due to the individualized nature of data-based staff development in the ALEM, which provides training to each teacher based on his/her current needs. If, for example, one teacher received training in adaptive skills while another received training in program-specific skills, the teachers' relative performance levels in the two skill categories might be expected to change.

Patterns of Implementation as a Function of Type of Teaching Skill

Certain similarities and differences in patterns of implementation of generic, adaptive, and program-specific skills over time were noted and discussed in the

previous section. The similarities and differences can be summarized as follows:

1. Generic skills differed from adaptive and program-specific ones in that the mean level of the latter but not the former increased significantly over the three years of the study.

2. The three types of teaching skills exhibited a similar cyclical effect, consisting of an increase in mean level of implementation from fall to winter/spring within each year, followed by a decrease from winter/spring to the next fall.

3. The three types of teaching skills were similar in that they all showed a decreased cyclical effect over the three years.

In summary, few marked differences were found in patterns of change over time for the three types of teaching skill.

When mean levels of implementation are examined, however, a large difference is evident between generic and adaptive skills, on the one hand, and program-specific skills, on the other. The overall mean levels of implementation of generic and adaptive indicators were both greater than 90 per cent (92.4%, and 93.4%, respectively). Moreover, as Figure 1 shows, generic and adaptive means were very similar at all measurement points. Though generic mean scores slightly exceeded adaptive means in 1980-81, while adaptive means exceeded generic mean scores in 1981-82 and 1982-83, these differences were small -- usually less than two percentage points.

The overall percentage mean of the program-specific scores, on the other hand, was only 80.1 percent. Moreover, program-specific means remained consistently lower over all three years than the means of the other two skill categories. Although they approached nearer to the generic and adaptive means in winter/spring of each year than in fall, they never "caught up": The difference between the program-specific means and the generic and adaptive means was always greater than 5 percentage points and usually 10 percentage points or more.

The item analyses conducted on the 1980-81 and 1982-83 data sets throw additional light on the difference in mean level of implementation of program-specific teaching skills, on the one hand, and generic and adaptive skills, on the other. Based on an arbitrary criterion of 40% or more failures in a given year as a cutoff point between "difficult" and "easy" items, 22 items were identified as difficult in 1980-81. Sixteen (73%) of these items were program-specific performance indicators, while only 6 (27%) were adaptive or generic. Of the 16 originally difficult program-specific items, 7 (44%) remained difficult in 1982-83, while 9 (56%) became easier. Of the 6 non-program-specific difficult items (4 generic and 2 adaptive) in 1980-81, only 1 (17%) remained difficult in 1982-83, while the other 5 (83%) became easier. Thus, program-specific items were not only more likely to be difficult to implement in the first place, but were also less likely to become easier over the next two years.

The high levels of implementation of the relatively novel adaptive teaching skills by the second year -- as high as those of the more familiar generic skills and considerably higher than the program-specific means -- was, at first, surprising. However, it can probably be explained by the presence in the ALEM, of a highly structured management/support system for the diagnostic-prescriptive component of the educational program. The support system includes especially prepared, individualized basic skills curricula, explicit rules regarding use of tests and other diagnostic techniques, and detailed prescription sheets which list multiple activities related to each curricular objective. These materials and rules make both the goals and methods of the program's adaptive teaching behaviors explicit and clear. Berman & McLaughlin (1977) concluded that innovative practices with clear goals and objectives are more likely to be adopted and continued by teachers; it is likely that the clarity of methods and procedures greatly facilitated teachers' implementation of adaptive skills.

Another reason for the relatively high level of implementation of adaptive skills may be that such skills are probably not as "new" as they may at first appear. Though extensive individualization of instruction is unlikely in traditional settings, good traditional teachers have always adapted their instruction to some degree to individual differences among students. Good traditional teachers notice when a student has difficulty and try to figure out why; when a student fails to learn, they vary their teaching styles or methods to meet his/her needs; they often group students for instruction, especially in reading, based on the students' current performance levels. Thus, though the ALEM and other adaptive instruction programs include more comprehensive and more structured methods for adapting instruction to student needs, the basic concepts and techniques of adaptation are rather widely known and practiced.

The ALEM's program-specific skills, on the other hand, are not only complex and novel; in addition, they lack a highly structured management/support system, such as that available for adaptive skills. Program-specific skills required for effective implementation of the ALEM include the orchestration and appropriate integration of instruction based on the program's prescriptive curricula with the use of exploratory learning centers and student self-scheduling. The appropriate use of exploratory learning centers requires that teachers develop a wide range of learning options, -- activities for which teachers often have little time. Because self-scheduling is new not just to teachers but also to students, teachers must teach students to use the system while learning it themselves. Program-specific skills did improve markedly over time, probably due to the ALEM's built-in training support component. However, given their novelty, complexity, and lack of structural support, it is not surprising that they remained more difficult for teachers to acquire and maintain than either generic or adaptive skills.

Despite the large differences in level of implementation of program-specific as

compared with generic and adaptive teaching skills, the correlations among all three types of teaching skills in individual teachers at any given time were overwhelmingly positive and significant. That is, an increase (or decrease) of a teacher's score in one skill category was likely to be associated with an increase (or decrease) in the others as well. This is probably due, at least in part, to the fact that skills in all three categories are part of a single, integrated instructional system, wherein a change in any aspect affects the other aspects as well. Teachers' motivational characteristics may also be a factor. For example, a teacher who is motivated to work hard to implement an innovative educational program is likely to show positive changes in a variety of teaching skills, while a teacher lacking such motivation may show little or no change (or a negative change) in all of them.

Site-to-Site Differences in Patterns of Implementation

As Table 1 indicates, the Site effect was highly significant in all analyses. That is, the mean level of implementation of all three types of teaching skills differed significantly from one site to another. However, the direction of the differences varied among the skills categories, as revealed in Table 2, which displays site means and relative ranks in each skill category. The table shows that, with the exception of Site C, whose mean level of implementation was highest in all three skill categories, no other site was consistently highest or lowest compared with the others. For example, Site B had relatively high generic and adaptive means, but ranked lowest in implementation of program-specific skills; Site D, on the other hand, had the lowest generic mean, but outperformed both Sites A and B in implementation of program-specific skills.

The Site x Year interaction was significant in all analyses, indicating that year-to-year changes differed from one site to another. Figures 2, 3, and 4 show

patterns of implementation over time as a function of site for generic, adaptive, and program-specific skills, respectively. Examination of the figures shows that each site showed a unique pattern of change, which was fairly consistent over all skill categories. For example, Site A showed little change in level of implementation of any category from 1980-81 to 1981-82, followed by increased levels in all categories from 1981-82 to 1983; whereas Site B showed an increase in all categories from 1980-81 to 1981-82, but no change (generic and adaptive) or a decrease (program-specific) from 1981-82 to 1982-83.

Comparisons of Figures 2, 3, and 4 reveals another interesting difference in sites' patterns of implementation of generic, adaptive, and program-specific skills. Whereas all sites started at about the same (relatively low) level on generic and adaptive implementation indicators in fall, 1980, and then became progressively more different, the sites differed markedly in the degree of implementation of program-specific performance indicators from the start.

These site differences and patterns of change are explainable in terms of the amount and type of available training support at the four sites. It will be recalled that little systematic, data-based training had been conducted prior to 1980-81, but that such training became an integral part of the ALEM's implementation at the four sites after that point. Thus, the uniform levels of generic teaching skills in fall, 1980, probably reflect the fact that teachers at all sites came from comparable types of preservice training programs and had had comparable post-training experience. Similarly, the uniform initial degree of implementation of adaptive skills can be explained by the similarity in strategies and materials used across the sites for individualizing instruction. Program-specific teaching skills, on the other hand, are based neither on traditional training and experience nor on concrete, structural supports. Therefore, their degree of implementation in fall, 1980, probably depended largely on the extent to which teachers were

encouraged or helped to use the new techniques at that time. Such encouragement and help might well have varied from one site to another. While school administrators and support personnel at certain sites may have emphasized the centrality of program-specific skills, those at other sites may have perceived these skills to be peripheral (or, at least, secondary in importance to other components), resulting in marked site differences in level of implementation of program-specific skills.

The presence of systematic, data-based training as an ongoing program component over the next three years can be used to explain both the general increase in mean levels of implementation at all sites and also the increasing differences among sites. In the ALEM, data-based training is based on the results of implementation assessment. Given the results, training and support personnel at each site must decide on training priorities. It is highly probable that different sites would select different program components for training emphasis; differences in training, in turn, would produce different levels of implementation and patterns of change.

Some support for this explanation was obtained by a re-examination of training data collected during a study of the ALEM's data-based training program (Wang & Gennari, 1983). In that study, data on number of hours of training devoted to the ALEM's critical features during one year (1981-82) were collected and aggregated over ten sites, including those of the present study. Re-calculation of hours of training within each of this study's four sites revealed certain relations between training emphases and levels of implementation. For example, Site D, whose teachers had relatively high mean implementation scores on program-specific skills, was found to have devoted relatively more training time to program-specific skills, compared with generic and adaptive skills, than the other three sites; Sites B and C, the sites with the highest mean level of implementation of adaptive skills, devoted relatively more training time to these skills, compared with generic and program-specific ones, than did Sites A and D.

Since the 1981-82 training data were aggregated over all teachers at the sites (including, but not limited to, the 42 teachers in the current study) and were collected during only one year, the data cannot be regarded as conclusive. However, they provide some support for the contention that site differences in patterns of implementation are at least partially accounted for by site differences in type and amount of training support.

At any rate, it is clear that, despite the fact that all sites were implementing a single educational program having well-defined critical features, the methods and patterns of implementation varied markedly. These findings provide not only additional support but also quantitative evidence for the Rand study conclusion that, as innovative programs are continued and maintained at a given site, they are modified and adapted to meet the needs of the particular institutional setting.

Conclusion

The study's finding of varying patterns of implementation of an innovative educational program over time as a function of type of teaching skills, sites, and teachers within sites provides convincing evidence that program implementation is not an all-or-none phenomenon. Even in a well-established program, taught by experienced teachers, level of implementation is likely to fluctuate. Though some part of this fluctuation is explainable by the cyclical nature of the school year, other factors such as type or amount of training and other types of support are probably much more powerful. The results of the study suggest that, when ample support is provided, improvements in implementation are likely to result: the absence of or inadequate levels of such support, however, may lead to stagnation or even decrements in teaching skills.

Both the patterns of change in mean level of implementation over time and the

differences among sites argue for the centrality of carefully designed and delivered staff development in support of program implementation. For maximal effectiveness, such staff development should be based on assessed needs of individual teachers. In addition, since innovative programs tend to include many components and since training time is limited, support personnel need to give considerable thought to developing training priorities consistent with the needs of the school and the district. In particular, more intensive training than is usually provided is probably necessary to bring the level of complex, novel skills (such as the program-specific skills of the present study) to a high level. Finally, since implementation of innovative programs usually requires extra effort on the part of teachers, support personnel need to attend to motivational factors as well as skill development, in order to increase teachers' willingness to put forth the extra needed effort.

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Table 1

Summary of Repeated Measures' Analyses of Variance across Sites, Years and Rounds for Total IABAI Scores and Scores for Generic, Adaptive and Specific Categories

Source of Variance	Degrees of Freedom	Total		Generic		Adaptive		Specific	
		F	p	F	p	F	p	F	p
Site	3	3.96	.05	19.11	.0001	11.65	.0001	6.23	.005
Year	2	10.40	.0005	2.73	N.S.*	16.49	.0001	11.42	.0001
Round	1	118.19	.0001	16.94	.0005	28.17	.0001	120.77	.0001
Site x Year	6	10.71	.0001	7.59	.0001	3.70	.005	12.10	.0001
Site x Round	3	4.62	.01	1.89	N.S.	0.27	N.S.	6.64	.005
Year x Round	2	8.01	.001	3.21	.05	4.47	.05	7.57	.005
Site x Year x Round	6	2.78	.05	0.72	N.S.	1.34	N.S.	6.57	.0001

Note: Error sources of varience were:
for site: ~~site x~~ teachers within sites with 38 d.f.
for year and site x year: year x teachers within sites with 76 d.f.
for round and site x round: round x teachers within sites with 38 d.f.
for year x round and site x year x round: year x round x teachers within sites for 76 d.f.

*N.S. – Not Significant

Table 2

Mean Level of Implementation of
Generic, Adaptive, and Program-Specific
Skills as a Function of Site

Level of Implementation

	Generic		Adaptive		Program-Specific	
Site	Mean Percent	Rank	Mean Percent	Rank	Mean Percent	Rank
A	94.2	3	90.5	4	76.5	3
B	95.0	2	95.8	2	75.9	4
C	95.1	1	96.1	1	83.5	1
D	87.4	4	91.0	3	82.8	2

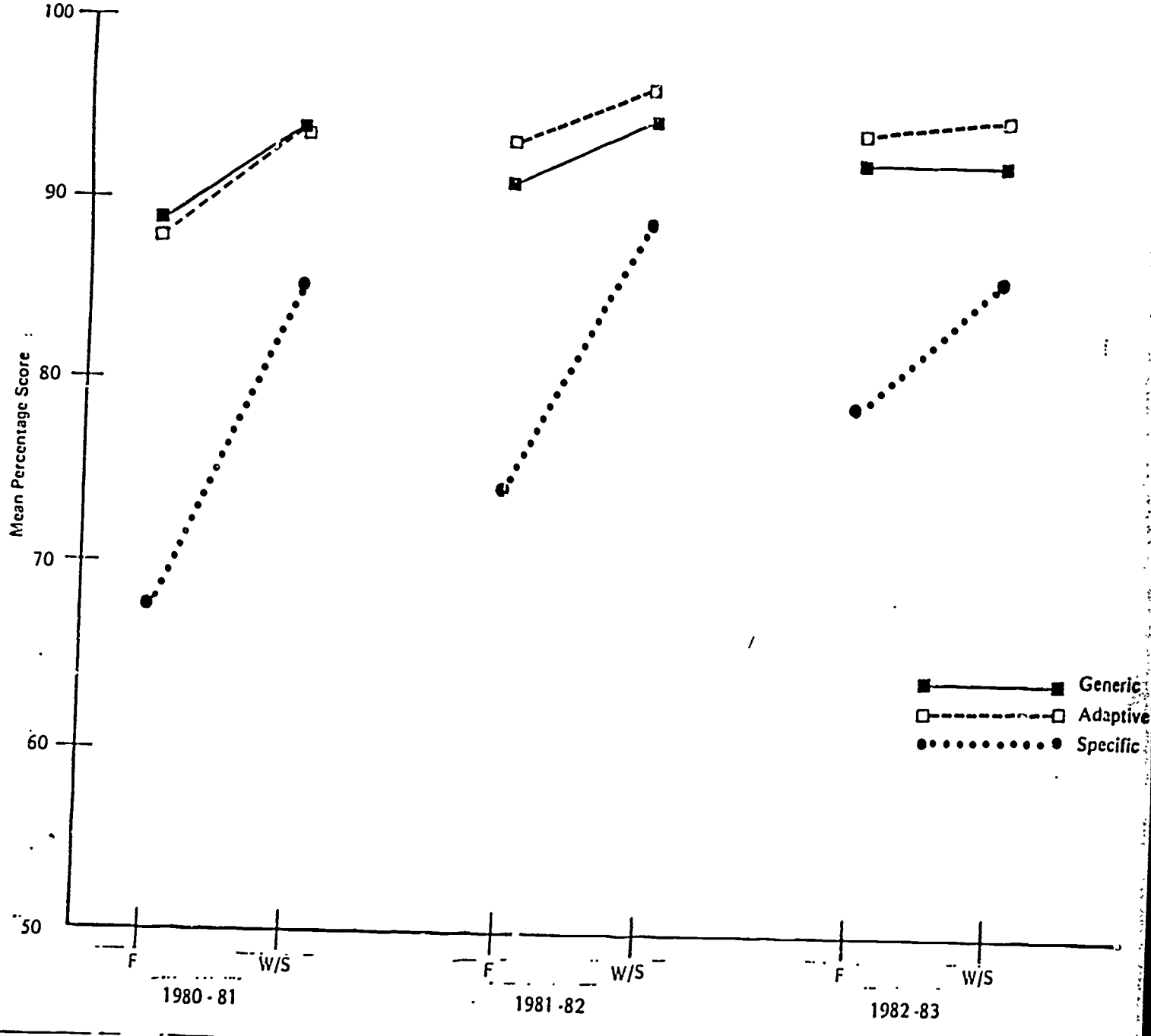

Figure 1 Percentage means of Generic, Adaptive, and Specific IABAI scores for all sites combined across three years of implementation.

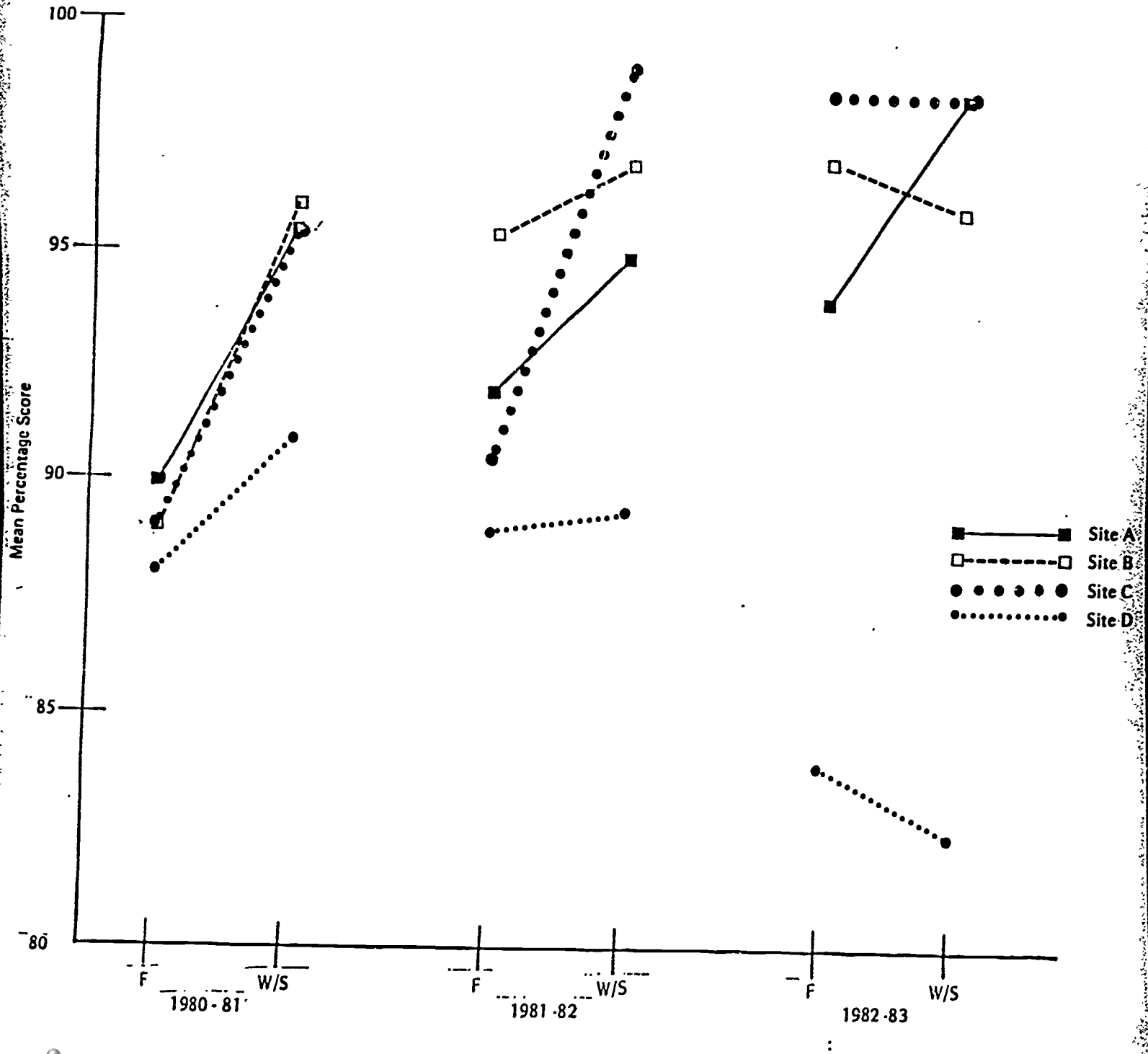

Figure 2. Means of Generic IABAI percentage scores at four sites across three years of implementation.

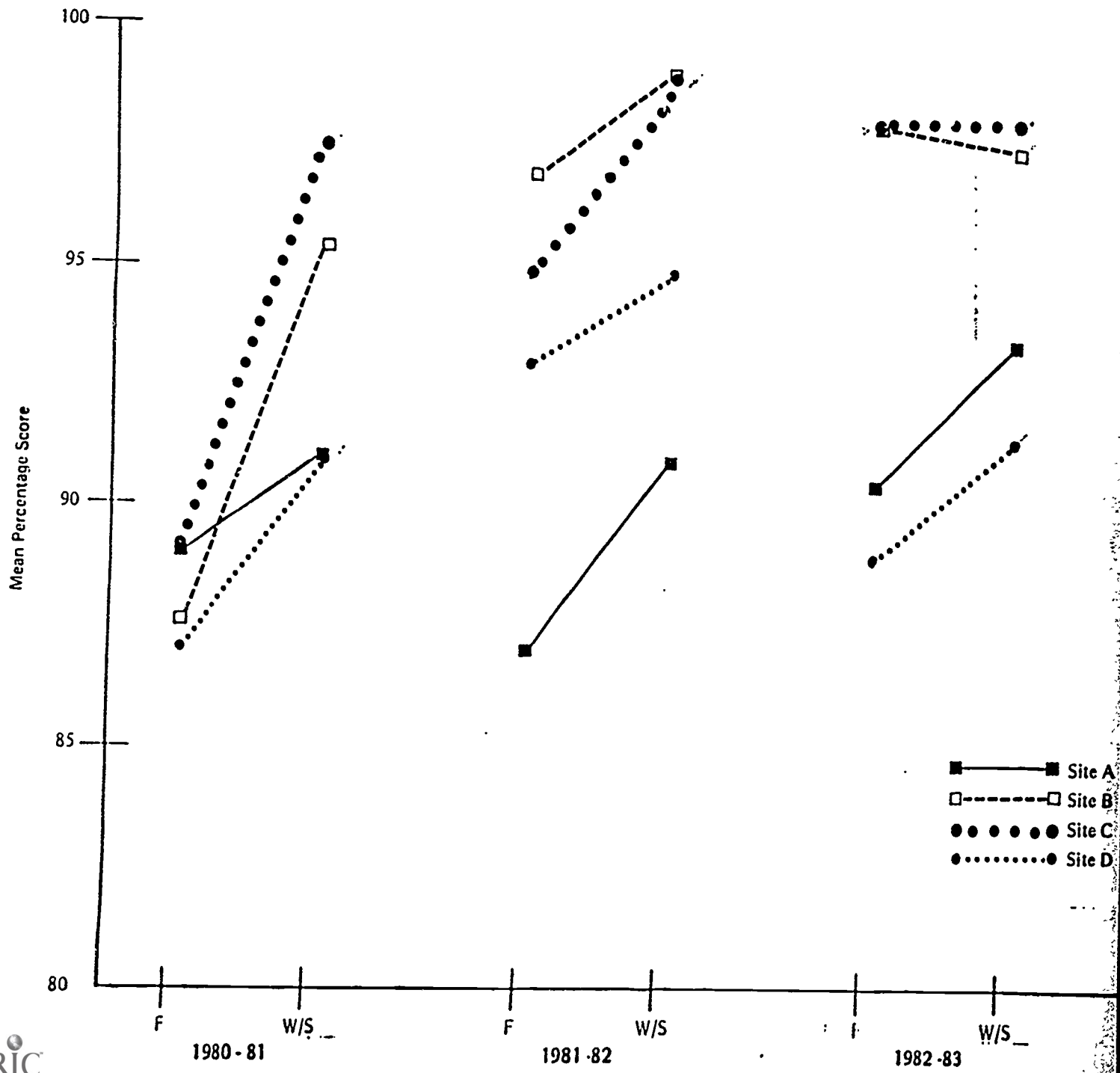

Figure 3. Means of Adaptive (ABA) percentage scores at four sites across three years of implementation.

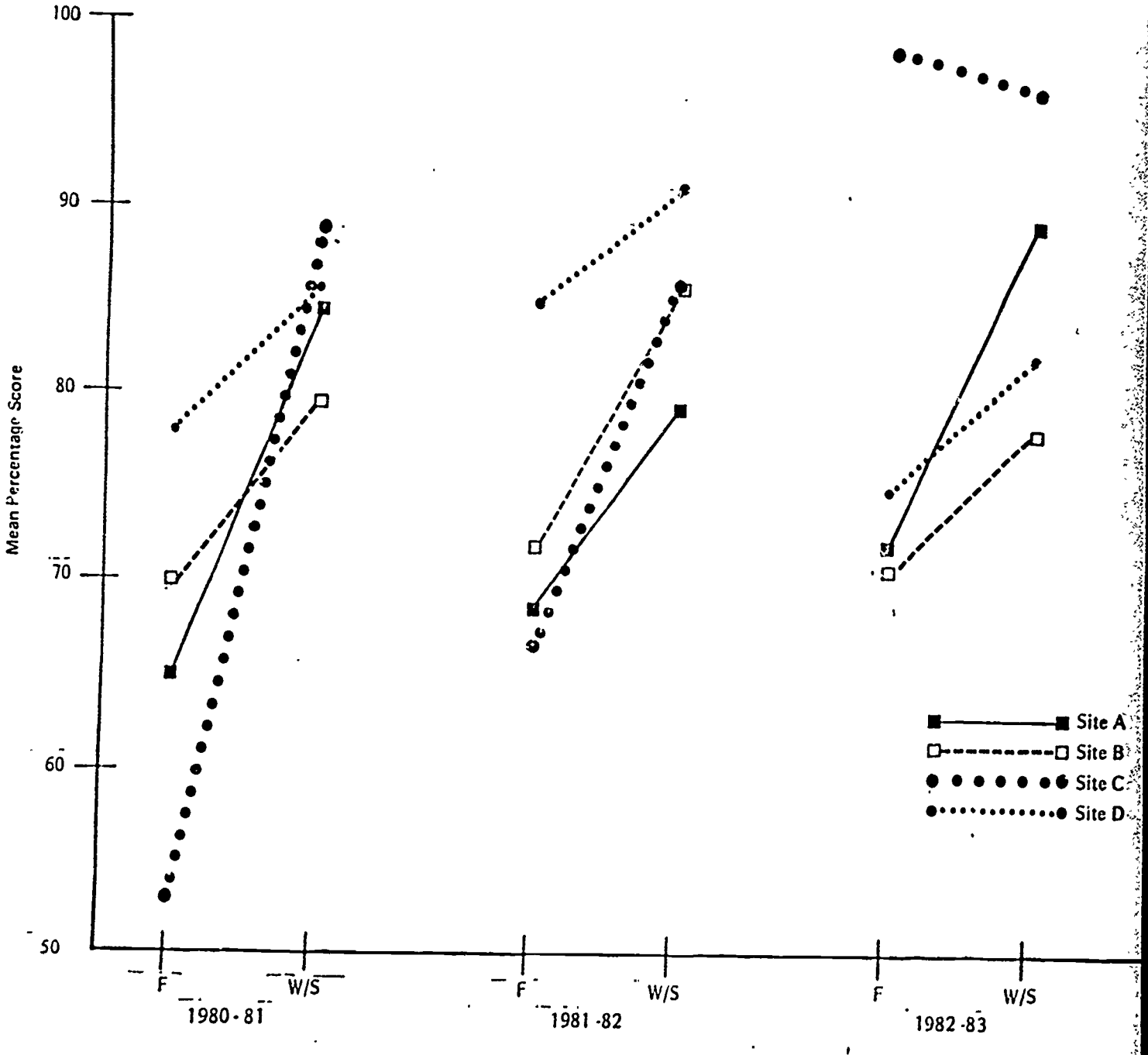

Figure 4. Means of Specific IABAI scores at four sites across three years of implementation.