

FACTORS AFFECTING TEACHERS' AND PRINCIPALS' STAGES OF CONCERN OVER CARRYING OUT BENCHMARK TESTING

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The search for strategies to successfully carry out educational programs has been the focus of research for more than 10 years. Yet many questions remain unanswered.¹ In this paper, we discuss the relationship of selected school-environment factors to the implementation of a potentially controversial innovation—benchmark testing. We first address concerns theory and research findings on implementation. The literature review is followed by a report of an investigation of the relationship of principals' and teachers' stages of concern about benchmark testing and (1) their degree of involvement, (2) self-perceptions of knowledge about the innovation, (3) the nature of staff-development activities they were engaged in, and (4) the grade level taught or administered.

The study centered on a large, urban, central U.S. school district where a criterion-referenced benchmark-testing program was being implemented. As part of a district five-year plan, the central administration mandated centralized curriculum development, with the curriculum, learning materials, expectation levels of students, and measurements of achievement to be districtwide. The implementation of the curriculum and achievement testing occur at the building level under the direction of line superintendents.

The benchmark tests were developed by school staff and are designed to measure student achievement of citywide grade-level objectives in reading, writing, and mathematics. A purpose of the tests is to improve student achievement by identifying and providing assistance for those failing to achieve pre-established benchmarks. Standards of achievement are established for each test at the promotional gate years of kindergarten and grades 2, 5, and 7. To be promoted from grade to grade, students must attain these standards. At the high school level, students must earn 60 credits and pass the 9th-grade benchmark tests to receive a diploma.

¹Susan F. Loucks and Ann Lieberman, "Curriculum Implementation," in *Fundamental Curriculum Decisions*, ed. Fenwick W. English (Alexandria, Va.: Association for Supervision and Curriculum Development, 1983), pp. 126-141

RELATED LITERATURE

The implementation theory basic to our investigation has grown out of the work of Gene Hall and other staff members formerly at the Research and Development Center for Teacher Education, University of Texas, Austin, pertaining to an individual's stage of concern.² Their investigations indicate that when an individual is introduced to an innovation to be carried out, that person's first concerns are *unrelated* to the innovation, followed by concerns for *self* (my adequacy, understanding) and, if these are resolved, by *task* concerns (what do I need to know, to be able to do) and, finally, when resolved, by *impact* concerns (the impact of the innovation on the learner). The purpose of our investigation was to determine whether selected implementation variables relate to a growth in teachers' and principals' stages of concern—from a concern for *self* to a concern for the *impact* on students. We must learn what factors constrain or increase the likelihood that teachers and principals will move from lower level concerns, such as concern for self (Stage 2, Personal) to a concern for the learner (Stage 4, Consequences), to the highest level of concern—seeking ways to improve the innovation being carried out or to promote a more appropriate alternative (Stage 6, Refocusing). Only as teachers and principals move to these higher levels of concern can desirable programs be carried out in schools. The seven stages of concern are defined in Table 1.

We cannot overemphasize the centrality of the teacher in carrying out an adopted program. A Rand change-agent study found teachers' commitment to an innovation important for project implementation.³ McLaughlin and Marsh reported that a main reason many of the Great Society reform efforts failed was that the programs seriously underestimated the importance of teacher involvement in implementing programs and their training needs.⁴ In a study of unsuccessful implementations, McKay and Nelson found that programs are most likely to fail without teacher training and support.⁵ Difficulties with carrying out new programs have led to arguments for viewing teachers as more active agents in the innovation process.⁶

²Gene E. Hall, Archie A. George, and William L. Rutherford, *Measuring Stages of Concern About the Innovation. A Manual for Use of the SoC Questionnaire*, 2nd ed (Austin: University of Texas, 1979).

³Paul Berman and Edward W. Pauly, *Federal Programs Supporting Educational Change, Volume II. Factors Affecting Change Agent Projects* (Santa Monica, Calif.: Rand Corporation, 1975).

⁴Milbrey W. McLaughlin and David D. Marsh, Staff Development and School Change, *Teachers College Record* 80 (September 1978) 69–94.

⁵A. Bruce McKay and Marilyn E. Nelson, "Inservice Training for Curricular Change," *School Science and Mathematics* 80 (December 1980): 684–690.

⁶John K. Olson, "Teachers' Constructs and Curriculum Change," *Journal of Curriculum Studies* 12 (January–March 1980), 1–11, John Elliott, *Objectivity, Ideology, and Teacher Participation in Educational Research* (Norwich, England: University of East Anglia, Center for Applied Research in Education, 1975), Barry McDonald and Robert Walker, *Changing the Curriculum* (London: Open Books, 1976).

Table 1. Definitions: Stages of Concern about the Innovation

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- 6—*Refocusing*: The focus is on exploring more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. The individual has definite ideas about alternatives to the proposed or existing form of the innovation.
- 5—*Collaboration*: The focus is on coordinating and cooperating with others regarding the use of the innovation.
- 4—*Consequences*: Attention focuses on the effect of the innovation on students in their immediate sphere of influence. The focus is on the relevance of the innovation for students; evaluation of student outcomes, including performance and competencies; and changes needed to increase student outcomes
- 3—*Management*: Attention focuses on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.
- 2—*Personal*: The individual is uncertain about the demands of the innovation, his or her inadequacy to meet those demands, and his or her role in the innovation. This stage includes an analysis of the individual's role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.
- 1—*Informational*: A general awareness of the innovation and interest in learning more detail about it are indicated. The person seems to be unworried about himself or herself in relation to the innovation and is interested in substantive aspects of the innovation in a selfless manner, such as general characteristics, effects, and requirements for use.
- 0—*Awareness*: Little concern about or involvement with the innovation is indicated.
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NOTE. Original concept from G. E. Hall, R. C. Wallace, Jr., and W. A. Dossett, *A Developmental Conceptualization of the Adoption Process within Educational Institutions* (Austin: University of Texas, Research and Development Center for Teacher Education, 1973).

Many studies have stressed the principal's crucial role in carrying out innovations.⁷ Likewise, Nicholson and Tracy found that principals' knowledge of the educational change and understanding of their role were significantly related to teachers' attitudes toward the change.⁸ Some evidence also exists that principals' moral support and active participation are key elements of an effective support system during implementation.⁹

Selected aspects of staff development determine the effectiveness of the development effort in promoting successful implementation of programs.¹⁰ These aspects include (1) context, (2) assessment and incorporation of teacher

⁷Paul Berman and Milbrey McLaughlin, *Federal Programs Supporting Educational Change Volume VIII Implementing and Sustaining Innovations* (Santa Monica, Calif: Rand Corporation, 1978), Susan F. Loucks and Harold Pratt, "A Concerns-Based Approach to Curriculum Change," *Educational Leadership* 37 (December 1979): 212-215

⁸Everett W. Nicholson and Sandra J. Tracy, "Principals' Influence on Teachers' Attitude and Implementation of Curricular Change," *Education* 103 (Fall 1982): 68-73

⁹Seymour Sarason, *The Culture of the School and the Problem of Change*, 2nd ed. (Boston: Allyn and Bacon, 1982).

¹⁰Gary Griffin, "Implications of Research for Staff Development Programs," *Elementary School Journal* 83 (March 1983): 414-425.

needs, (3) content, and (4) process. Interaction, or active participation in training sessions, allows the participants to relate personally to the knowledge, skills, and attitudes gained.¹¹

Locus of decision making also affects how educational change is carried out. Top-down decisions about both staff development and the program being carried out are more likely to produce undesirable side effects and minimal recipient satisfaction.¹² Berman and McLaughlin found that neither top-down nor bottom up but rather collaborative planning by teachers and administrators results in more effective implementation of resulting plans.¹³

Time is another critical factor relating to curriculum change. The most successful implementations provide adequate time to learn, practice, master, and apply what needs to be learned about an innovation.¹⁴ Change must be thought of as long term, with two to three years the minimum time allowed for bringing about innovations.¹⁵

To successfully carry out a new innovation, teachers and administrators need a clear understanding of the change. Although this statement seems obvious, studies have identified a lack of understanding of a proposed change as a frequently perceived barrier by teachers involved in implementation.¹⁷

¹¹Ibid

¹²Gary D Fenstermacher and David C Berliner, "Determining the Value of Staff Development," *Elementary School Journal* 85 (January 1985): 281-314; Judith Schiffer, "A Framework for Staff Development," *Teachers College Record* 80 (September 1978): 4-22; Gene Hall and Susan Loucks, "Teacher Concerns as a Basis for Facilitating and Personalizing Staff Development," *Teachers College Record* 80 (September 1978): 36-53; Theodore J. Czajkowski and Jerry L. Peterson, "Curriculum Change and the School," in *Considered Action for Program Improvement*, ed Arthur W. Foshat (Alexandria, Va. Association for Supervision and Curriculum Development, 1980), pp 158-175; Fred H Wood, Steven R. Thompson, and Francis Russell, "Designing Effective Staff Development Programs," in *Staff Development/Organizational Development*, ed Barbara Dillon Peterson (Alexandria, Va. Association for Supervision and Curriculum Development, 1981), pp. 59-91

¹³Paul Berman and Milbrey McLaughlin, *Federal Programs Supporting Educational Change, Volume VIII. Implementing and Sustaining Innovations* (Santa Monica, Calif. Rand Corporation, 1978)

¹⁴Ibid

¹⁵Mary M Dupuis and Eunice N Askov, "An Effective Inservice Model for Content Area Reading in Secondary Schools," *Educational Leadership* 40 (October 1982): 48-50; Michael Fullan, *Issues Involved in Conceptualizing and Evaluating the Implementation of New Follow Through Models* (paper prepared for the National Institute of Education, Teaching and Learning Division, 1983); Gene Hall, *Using the Individual and the Innovation as the Frame of Reference for Research on Change* (paper presented at the annual meeting of the Australia Association for Research in Education, Melbourne, 1979); Paul E Heckman, Jeannie Oakes, and Kenneth A. Serotnik, "Expanding the Concepts of School Renewal and Change," *Educational Leadership* 40 (April 1983): 26-32; Robert K. James, "Understanding Why Curriculum Innovations Succeed or Fail," *School Science and Mathematics* 81 (October 1981): 487-495.

¹⁶Sam D. Sieber, "Knowledge Utilization in Public Education. Incentives and Disincentives, in *Improving Schools—Using What We Know*, ed. Rolf Lehming and Michael Kane (Beverly Hills, Calif. Sage, 1981), pp 115-167; Neal C. Gross, Joseph E. Giacumta, and Marilyn Bernstein, "Failure to Implement a Major Organizational Innovation, in *Managing Change in Sociological Perspectives, Strategies, and Case Studies*, ed J. Victor Baldrige and Terrance E. Deal (Berkeley, Calif. McCutchan, 1975), pp. 409-426; Miriam Ben-Peretz and Lya Kremer, "Curriculum Imple-

Several studies have addressed the relationship between implementation and grade or age level being taught. Consumers of this research may need to draw their own conclusions, however. Adams suggests that elementary teachers tend to be child-centered and less subject matter bound, others indicate that elementary teachers tend to relate positively to implementation in general.¹⁷ Sarason, in summarizing research on secondary level teaching, points out that secondary teachers perceive less success in implementation, and Mann, in commenting on the results of the Rand studies, indicates that secondary teachers are more independent and often more resistant to change.¹⁸ Secondary teachers are more subject-matter-oriented, and they tend to communicate less clearly and frequently with other curriculum workers during implementation.¹⁹

The educational literature identifies many variables related to the successful implementation of educational programs. We have focused here on the variables we believe may explain change or the lack of change in teachers' and principals' stages of concern over benchmark testing. The variables chosen were (1) involvement in the decision to carry out benchmark testing, (2) participation in carrying out the testing program, (3) the time involved in carrying out the testing innovation, (4) the individuals' understanding of benchmark testing, (5) the nature of staff-development activities relating to the testing program, and (6) grade level taught or administered.

RESEARCH IMPLICATIONS

The results of this longitudinal study will lead us beyond our current level of understanding of both the implications of concerns theory and the

mentation and the Nature of Curriculum Materials," *Journal of Curriculum Studies* 11 (July-September 1979) 247-255, Ian I. Dow and Ruth Y. Whitehead, *New Perspectives on Curricular Implementation—A Survey of Teacher, Principal, and Consultant/Co-ordinator Concerns* (Ontario Ontario Public Schools, Men Teachers' Federation, 1981).

¹⁷Ronald D. Adams, "Teacher Development: A Look at Changes in Teacher Perceptions and Behaviors Across Time," *Journal of Teacher Education* 33 (July-August 1982) 40-43, Matilda Butler-Paisley and William Paisley, *Communication for Change in Education. Linkage Programs for the '70's* (Stanford, Calif.: Stanford University, Institute for Communication Research, 1975), John A. Emrick and Susan M. Peterson, *A Synthesis of Findings Across Five Recent Studies in Educational Dissemination and Change* (San Francisco: Far West Laboratory for Educational Research, 1978), Paul Berman and Milbrey McLaughlin, *Federal Programs Supporting Educational Change, Volume VII Factors Affecting Implementation and Continuation* (Santa Monica, Calif.: Rand Corporation, 1977), Ronald C. Havelock, *The Change Agent's Guide to Innovation in Education* (Englewood Cliffs, N.J.: Educational Technology Publications, 1973), Richard D. Kimpston and Douglas H. Anderson, "Teacher and Principal Concerns: The Implementation of Benchmark Testing," *Planning and Changing* 16 (Summer 1985) 96-104.

¹⁸Seymour Sarason, *The Culture of the School and the Problem of Change*, 2nd ed. (Boston: Allyn and Bacon, 1982), Dale Mann, *Making Change Happen* (New York: Teachers College Press, 1978).

¹⁹Ronald D. Adams, "Teacher Development: A Look at Changes in Teacher Perceptions and Behaviors Across Time," *Journal of Teacher Education* 33 (July-August 1982) 40-43, Michael Fullan and Glenn Eastabrook, *School Change Project Interim Report of Findings* (Toronto: Ontario Institute for Studies in Education, 1973).

factors associated with the effective implementation of educational innovations, especially the potentially controversial ones. Some criticize benchmark testing, as conceived in the school district being studied, for employing tests that discriminate against minority students or those with special learning difficulties. Conversely, this testing program represents one way school districts may be more accountable in their quest to improve educational standards. For those involved in this study, despite their feelings about the testing program, some outside force cannot automatically bring about higher level concerns (e.g., a concern for learners rather than a concern for self). Holding concerns and changing concerns rest with the individual. We expect, however, that these study results will help to identify factors that constrain teachers' and principals' movement to higher level concerns. Then, a school district may intervene to help staff members focus more quickly on learner and program concerns and away from their concern for self.

RESEARCH QUESTIONS

This study attempts to answer six questions about the implementation of benchmark testing:

1. Do individual teachers' and principals' stages of concern vary over time?
2. Does grade level taught correlate with stage of concern?
3. Does role (teacher/principal) relate to stage of concern?
4. Does a relationship exist between knowledge about benchmark testing and stage of concern?
5. Does the nature of involvement in carrying out benchmark testing correlate with stage of concern?
6. Does a relationship exist between the variations and forms of staff development provided and stage of concern?

METHOD

Panel analysis was used to assess teachers' and principals' concerns about carrying out benchmark testing. A general information questionnaire and an instrument for assessing the level of concern about this innovation were administered at the beginning (Phase 1). Two years later, these same participants were surveyed again (Phase 2), using the same instruments, plus a set of questions developed by the authors assessing the nature of the staff-development program provided, how informed the respondents were about benchmark testing, and the nature of their involvement. A time lapse of two years was cited in the literature review as a minimum required for successful change.

INSTRUMENTS

The Stages of Concern Questionnaire, developed in the Concerns-Based Adoption Model project at the Research and Development Center for Teacher

Education, University of Texas at Austin, was used to assess teachers' and principals' level of concern. The questionnaire consists of 35 statements, with 5 items targeted to each of seven stages of concern. The respondents indicate how true each of the 35 concerns about an innovation being carried out is for them by marking a number on a 0-to-6 scale. High numbers indicate high concern, low numbers indicate low concern, and 0 indicates a very low concern or completely irrelevant item.

This questionnaire has been used extensively. In one study at the University of Texas involving teachers and college professors, the internal reliabilities of the questionnaire were estimated ($N = 830$). The alpha coefficients ranged from .64 to .83, with six of the stages of concern higher than .70. In a test retest study within a two-week period, correlations on the stages of concern scales using the Pearson r ($N = 132$) ranged from .65 to .86, again with six scales having correlations above .70. The composite representations of the feelings, preoccupation, thought, and consideration given to a particular issue or task is called *concern*. The generic name given to the issue, object, problem, or challenge, the focus of the concerns, is *innovation*.

The questionnaire developed by the authors gathered demographic data such as position and grade level taught or administered. Eight questions to assess how teachers and principals were prepared to carry out benchmark testing and eight questions on the degree of their involvement in the innovation were also included in the questionnaire.

SAMPLE

A random sample of teachers in one large midwestern school district was taken to draw a random sample of one-third of the teachers in each elementary, junior high, and senior high school in the district. All principals in the district were also included in the study. During Phase 1, there were 49 elementary, 9 junior high, and 10 senior high schools in the school district. The total sample included 526 teachers and 64 principals, with several principals serving more than one school.

In Phase 2, questionnaires were distributed to all teachers and principals selected in the initial sample. From that original sample, 392 teachers and 49 principals were still employed in the district. Because students were consolidated into fewer schools, several school buildings were closed, and teachers and principals were laid off during this two-year period, the study lost some participants between Phase 1 and Phase 2. When comparisons were made by age, gender, and grade level taught or administered, those who responded to the questionnaires in Phase 1 and Phase 2 were found to be representative of the random sample originally selected for Phase 1.

RESULTS

In Phase 1, the response rate for classroom teachers was 46 percent, for building principals, 81 percent. In Phase 2, about 64 percent of the teachers

and 76 percent of the principals responded. Those responding to the questionnaires in Phase 1 and Phase 2 were representative of the initial random sample selected for study in Phase 1.

A primary interest in Phase 1 was to determine whether varying intensities of teachers' and principals' stages of concern about benchmark testing initially existed. The results showed (Table 2) that the majority of teachers were either at Stage 0, 1, or 2 (89.6 percent), with a few elementary teachers at Stages 3 (Management), 5 (Collaboration), and 6 (Refocusing). The majority of the principals were also at Stages 0, 1, or 2 (88.5 percent). No principals' most intense concerns were Stage 3 (Management).

From the initial analysis of the results of Phase 2 (Table 2), we determined the change in teachers' and principals' stages of concern two years after introducing benchmark testing into the district. Only 8.0 percent of the teachers remained at Stage 0 (Awareness) and Stage 1 (Informational), and 32.3 percent were at Stage 4 (Consequences). However, the largest percentage (34.7 percent) had intense Personal (Stage 2) concerns. Principals also were no longer primarily at the Awareness and Informational stages, but had Consequences (35.1 percent) or Collaboration (29.7 percent) as their most intense stage of concern.

We then compared teachers' seven stages of concern by grade level taught (Table 3). An initial multivariate analysis of variance (MANOVA) was made to control the overall alpha level within the study.²⁰ The Wilks lambda approxi

Table 2. Stages of Concern of Classroom Teachers and Building Principals

Respondents	Stage of concern							Totals
	0	1	2	3	4	5	6	
<i>Phase 1</i>								
Teachers								
Number	87	67	62	18	0	6	1	241
Percent	36.1	27.8	25.7	7.5	0	2.5	0.40	100
Principals								
Number	17	16	13	0	1	2	3	51
Percent	32.7	30.8	25	0	1.9	3.8	5.8	100
<i>Phase 2</i>								
Teachers								
Number	6	14	87	32	81	20	11	251
Percent	2.4	5.6	34.7	12.7	32.3	8.0	4.4	100
Principals								
Number	0	2	5	4	13	11	2	37
Percent	0	5.4	13.5	10.8	35.1	29.7	5.4	100

²⁰James H. Bray and Scott E. Maxwell, "Analyzing and Interpreting Significant MANOVA's," *Review of Educational Research* 52 (Fall 1982): 340-367.

Table 3. The Stages of Concern Group Means of Teachers by Grade Taught (MANOVA Follow-Up Results): Phase 2

Stage of concern	Grade level				F
	Primary (N = 52)	Intermediate (N = 29)	Junior high (N = 20)	Senior high (N = 69)	
0—Awareness	7.59*	9.00	9.70	10.75*	2.74*
1—Informational	17.33	17.66	17.50	20.16	2.08
2—Personal	22.50	21.31	23.10	22.93	0.40
3—Management	17.90	17.96	17.85	17.16	0.14
4—Consequences	20.36	23.86	22.45	22.51	2.31
5—Collaboration	14.81	16.28	12.20	16.32	2.12
6—Refocusing	15.83	16.38	12.30	14.95	1.60

Wilks lambda = .741, $F(21, 460) = 2.4, p < .0005$

*Senior high significantly different from primary

* $p < .05$.

mate F value was statistically significant, $F(21, 460) = 2.4, p < .001$. An examination of the univariate F ratios revealed a significant difference only on the Awareness (Stage 0) score. A Scheffé follow-up test found that senior high school teachers had more intense scores at this stage than primary teachers.

We also compared teachers and principals for each of the seven stages of concern. Hotelling's T squared was statistically significant, $F(7, 192) = 5.60, p < .00001$. Next, univariate F ratios for each dependent variable were examined, and the discriminant weights were used for a more complete interpretation of the results.²¹ Teachers had significantly more intense Stage 0 (Awareness) and Stage 2 (Personal) concerns than did principals (Table 4). Principals had significantly more intense Stage 5 (Collaboration) concerns than did teachers. These results and the discriminant weights suggest a construct measuring teachers' concern over personal role and principals' concern over coordination and cooperation with others, with teachers at a significant distance from principals.

We also questioned teachers and principals about their knowledge of benchmark testing; their responses, on a 5-point Likert scale, ranged from none to very much. Knowledge of benchmark testing thus became an independent variable in relation to stage of concern. The MANOVA resulted in a statistically significant F value for the Wilks lambda, $F(21, 546) = 5.05, p < .000$. All univariate tests on stage of concern were statistically significant (Table 5) at the .01 level except for Stage 5 (Collaboration). Follow-ups with post hoc Scheffé tests found a consistent pattern. Teachers and principals with the lowest level of knowledge of benchmark testing had the most intense scores

²¹Richard J. Harris, *A Primer of Multivariate Statistics*, 2nd ed. (Orlando, Florida: Academic Press, 1985).

Table 4. Follow-Up Results to Hotelling's T^2 to Measure the Difference Between Teachers and Principals According to Stage of Concern: Phase 2

Stage	Position	Number of cases	Mean	Standard deviation	<i>t</i> value
0—Awareness	Teachers	180	9.19	6.08	5.38**
	Principals	20	5.60	2.19	
1—Informational	Teachers	180	18.37	7.07	1.68
	Principals	20	15.55	7.47	
2—Personal	Teachers	180	22.37	7.10	4.10**
	Principals	20	15.50	7.08	
3—Management	Teachers	180	17.44	7.66	1.39
	Principals	20	14.90	8.45	
4—Consequences	Teachers	180	22.12	6.14	0.57
	Principals	20	21.25	8.53	
5—Collaboration	Teachers	180	15.19	6.89	-2.31*
	Principals	20	18.95	6.91	
6—Refocusing	Teachers	180	14.91	7.26	1.25
	Principals	20	12.80	7.96	

Hotelling's $T^2 = 40.455, F(7, 192), p < .00001$.

* $p < .05$. ** $p < .01$.

at Stages 1 and 2. Those with the most knowledge of benchmark testing had the most intense scores at Stages 3, 4, and 6.

To better understand the construct running through the seven stages of concern, we examined the discriminant function structure. Of the three possible functions, two were statistically significant at the .005 level. The first and largest function was a construct found in Stages 0 and 1 (attitude toward the innovation); the second function, from Stages 3 and 4 (organizational impact). These results agree with the results from the Scheffé tests.

The Phase 2 study results indicated similar patterns concerning the relationship between experience with benchmark testing and stage of concern.

Table 5. Group Means of Teachers and Principals by Knowledge of Benchmark Testing and Stages of Concern (MANOVA Follow-Up Results): Phase 2

Stage of concern	Amount of knowledge				<i>F</i>
	Limited (<i>N</i> = 53)	Adequate (<i>N</i> = 86)	Much (<i>N</i> = 45)	Very much (<i>N</i> = 16)	
0—Awareness	13.13	7.73	6.33	6.00	18.09*
1—Informational	20.06	18.45	14.44	17.44	5.67*
2—Personal	23.00	22.52	17.78	21.38	5.33*
3—Management	17.85	17.16	14.36	21.62	4.03*
4—Consequences	20.64	21.98	20.93	28.25	6.79*
5—Collaboration	14.09	15.81	15.87	18.38	1.72
6—Refocusing	13.33	14.97	14.22	19.19	2.76*

Wilks lambda = .601, $F(21, 546) = 5.05, p < .000$

* $p < .01$.

Table 6. Group Means of Teachers' and Principals' Perceived Experience with Benchmark Testing and Stages of Concern

Stage of concern	Amount of experience					F
	None (N = 49)	Very little (N = 77)	Fair amount (N = 100)	Much (N = 51)	Very much (N = 19)	
0—Awareness	13.53	9.12	7.31	5.87	6.20	16.47*
1—Informational	20.15	18.00	16.96	14.36	16.06	4.12*
2—Personal	23.10	21.47	19.74	19.76	23.00	2.18
3—Management	16.85	16.99	15.46	16.36	17.69	0.56
4—Consequences	19.83	20.99	21.99	22.10	25.73	3.67*
5—Collaboration	15.09	13.13	15.91	17.18	18.50	3.74*
6—Refocusing	11.21	12.79	14.12	16.78	19.79	7.51*

* $p < .01$.

Teachers and principals with more experience with benchmark testing had more intense concerns at Stages 4, 5, and 6 than did those with limited experience (Table 6). Those with no experience registered strong Awareness (Stage 0) concerns.²²

One remaining variable showed a significant relationship between movement to upper stages of concern ($p < .03$)—the nature of teachers' staff-development activities. Those who had participated in more active, as opposed to passive, staff-development activities (Table 7) made significant changes in their stages of concern from lower to upper level concerns.²³

DISCUSSION

This study attempted to determine the variables associated with teachers' and principals' stages of concern over several years while carrying out a

Table 7. Comparison Between the Nature of Staff-Development Activities Provided Teachers and the Increase in Stages of Concern (t Test)

	Number of cases	Mean	Standard deviation	Standard error	t value	Degree of freedom	2-tail probability
<i>Group 1</i> No change in stage of concern	46	2.1739	1.50	220	-2.30	142	.023
<i>Group 2</i> Change in stage of concern	98	2.7551	1.38	139			

²²The questionnaire gave the respondents a range of possible involvement activities to ensure greater consistency and a more accurate interpretation of responses when analyzing the data.

²³From a list of the districts' benchmark-testing staff-development activities, the respondents identified the activities they participated in. In analyzing these data, activities were categorized as active (e.g., participating in a workshop on preparing benchmark test items) or passive (e.g., reading materials relating to benchmark testing).

potentially controversial innovation. We examined several variables with the potential to move school personnel away from personal concerns to student and program concerns. To carry out educational innovations, teachers and principals must focus their concerns at these higher levels.

Individuals with no previous experience with an innovation registered varying intensities of concern. Before introducing benchmark testing into the school district, both teachers and principals indicated varying intensities of concern about it. The results from the Stages of Concern Questionnaire revealed that both groups had concerns of lesser or greater intensity at the seven stages, and this instrument appears to be an effective tool for identifying and responding to staff concerns. The results indicate, for example, that staff inservice programs could be designed for, and staff members assigned to, programs that address their particular concerns about benchmark testing.

The period of time and nature of teacher involvement were significant factors in the movement of teachers away from unrelated and self concerns to task and impact concerns. The results of this study relate to findings of earlier studies. The time required and the involvement of those carrying out an innovation are important factors in effective implementation. The attitudes teachers bring to an educational innovation are critical if the proposed change is to occur. If teachers are to move away from being unconcerned, or to register only personal concerns about an innovation, and focus both on the tasks required and how the innovation affects students, then teachers must be directly involved in the innovation over several years.

Grade level taught or administered, as well as the role of teacher or principal, related to that person's stage of concern, as well as the change in stage of concern. Elementary teachers had more intense *task* and *impact* concerns, and secondary teachers had more intense *unrelated* and *personal* concerns. These results suggest that elementary teachers are more student oriented, as commonly reported in the literature, and this trait causes them to focus on concerns about the innovation being carried out and its influence on learners to a greater degree than do secondary teachers. Because a disproportionate number of elementary teachers are female, gender may be a confounding factor in these results.

The teachers' concerns were generally over their personal role in the innovation, principals' concerns were about coordination and cooperation in carrying out benchmark testing. Teachers typically carry a major share of the burden of putting an educational innovation into practice. Although teachers did make some movement to upper stages of concern, over the two years of the study they did not move strongly away from Stage 2 (Personal) concerns. Besides an obvious concern about personal responsibility for carrying out benchmark testing, other factors seem to have confounded teachers' movement away from personal concerns. Collaboration in the decision to carry out benchmark testing among staff in this district did not appear to be a virtue. Also, there was surprisingly little direct principal involvement in carrying out

the testing program. Principals' responses to the questionnaire verified that teachers, under the direction of line superintendents, have the major responsibility for carrying out testing programs. Principals' lack of involvement and responsibility not only affected teachers' concerns but also caused principals to worry about teachers' collaboration and cooperation. Collaboration among teachers and administrators in decisions about change and in efforts to carry out innovations is critical to the change process.

The nature of teachers' staff-development program and teachers' and principals' experience with and self-perception of knowledge about benchmark testing related directly to their stage of concern. The nature of the staff development program relating to benchmark testing was an obvious factor in teachers' stage of concern and the change in their stage of concern. Teachers who had been involved in several staff-development activities requiring direct participation initially had higher stages of concern, and moved to even higher stages, than those involved in one or two passive activities. Also, teachers and principals with the least experience with and knowledge about benchmark testing had the most intense concerns at Stage 0 (Awareness) and Stage 1 (Informational). The construct *attitude toward benchmark testing* would best describe concerns relating to these two stages. The most intense concerns of both professional groups who indicated greater experience with, and knowledge about, benchmark testing were at Stages 3 (Management) and 4 (Consequences), best characterized by the construct *organizational impact*.

Therefore, the nature of teachers' staff-development program, the amount of their experience with an innovation, and their perceptions of how knowledgeable they were about the topic of a staff inservice program (e.g., benchmark testing) were interacting variables in this study. The unusually passive nature of the benchmark testing staff-development program in this district helps to explain teachers' slow movement away from lower stage concerns between Phase 1 and Phase 2. Rather than indicating strong concerns about using benchmark testing and its effect on students, teachers in general persisted in their concern about the demands this innovation made on them, their role in the testing program, and personal commitments.

The way teachers were prepared for benchmark testing—primarily by receiving printed materials and attending faculty meetings—is inconsistent with what we know about effective staff-development programs. In planning staff-development programs, we must address the need for active participation and the need to engage in activities that are consistent with participants' needs. Also, if teachers and principals are to have positive attitudes toward an educational innovation, they must become directly involved in its implementation.

In conclusion, the findings of this study strengthen the theory on the implementation of educational innovations. Staff members who were involved in carrying out benchmark testing progressed through stages of concern about the innovation. This movement was especially pronounced for those actively involved over time, those committed to the innovation, and those with greater

knowledge about benchmark testing. Selected factors may hinder the staff's movement away from a concern for self and toward impact concerns. These factors include top-down decisions, a lack of staff-development activities that extend beyond an awareness level of the purpose and nature of the innovation, and principals' minimal involvement in helping to carry out the testing program.²⁴

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²⁴Despite its strengths and important findings, this study is limited. Generalizing from data gathered from a single school district is difficult, and the validity of self-reported data is always a concern. Our close contacts with numerous study participants during the investigation, and even for many years before the study, support the validity of the concerns measured by the instruments and the correlations reported.

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