DOCUMENT RESUME

ED 385 597 TM 024 045

AUTHOR	Powers, Donald E.
TITLE	An Approach to Classifying Teachers According to Their Orientations to Teaching. The Praxis Series: Professional Assessments for Beginning Teachers(TM).
INSTITUTION	Educational Testing Service, Princeton, N.J.
REPORT NO	ETS-RR-92-55
PUB DATE	Sep 92
NOTE	29p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Classification; *Educational Philosophy; *Orientation; Responses; Surveys; Teacher Effectiveness; *Teachers; *Teaching (Occupation)
IDENTIFIERS	*Additive Models

ABSTRACT

A small, representative sample of 114 U.S. teachers was asked to indicate the extent to which their teaching corresponded to each of five models of teaching. The models were those discussed by M. M. Kennedy: (1) process model; (2) learning community model; (3) additive model; (4) transformational model; and (5) conceptual change model. Respondents were then clustered according to the similarity of their responses. Four categories emerged. A major perspective that distinguished the groups was whether or not they perceived their teaching as corresponding to an "additive model," i.e. an approach in which content coverage is emphasized. The clusters also differed with respect to subject matter taught and teachers' assessments of the importance of several teaching functions. Five tables present teacher responses and categories. (Contains 20 references.) (Author/SLD)

THE PRAXIS SERIES
Professional Assessments for Beginning Teachers™

An Approach to Classifying Teachers According to Their Orientations to Teaching

Donald E. Powers

September 1992

RR. 92-55

Educational Testing Service

An Approach to Classifying Teachers According to Their Orientations to Teaching

Donald E. Powers

September 1992

Acknowledgments

The author expresses his appreciation to Kate Pashley for conducting the data analyses, Ruth Yoder for preparing the report, and Carol Dwyer, Ann Jungeblut, and Phil Oltman for helpful reviews on an earlier draft.

Abstract

A small, representative sample of U.S. teachers was asked to indicate the extent to which their teaching corresponded to each of five orientations to ("models" of) teaching. Respondents were then clustered according to the similarity of their responses. Four categories emerged. A major perspective that distinguished the groups was whether or not they perceived their teaching as corresponding to an "additive model," i.e., an approach in which content coverage is emphasized. The clusters also differed with respect to subject matter taught and teachers' assessments of the importance of several teaching functions.

An Approach to Classifying Teachers According to Their Orientations to Teaching

A prospective teacher's orientation or general approach to teaching is important in a number of regards. Ultimately, teachers' conceptions and beliefs about teaching and learning influence classroom practice (Brookhart & Freeman, 1992, Richardson, Anders, Tidwell, & Lloyd, 1991). Such beliefs entail tacit, often unconscious assumptions about students, classrooms, and subject matter (Kagan, 1992), and may reflect the ways in which teachers themselves were taught (Kennedy, 1991a). These beliefs typically accompany pre-service teachers when they embark on their formal teacher education, and they appear to be quite stable and relatively resistant to change. Furthermore, these convictions are related to teaching styles or modes of operating that tend to be consistently applied across different classes and grade levels (Kagan, 1992). Teachers' orientations are of consequence to particular students, insofar as some groups of students may be more comfortable in some kinds of learning environments than in others (Villegas, 1992). As Messick (1976) for one has noted, individual students, depending on their cognitive styles, motivation, and patterns of ability, may benefit more from some kinds of instructional situations than from others.

Besides helping to determine the knowledge and skills that teachers employ in their teaching, beliefs/orientations are an important consideration in the design of teacher evaluation systems. Murnane (1991), for instance, has stressed the need to base teacher assessments on a particular model of teaching, in order to push the practice of teaching in desirable directions. He has also cautioned, however, that evaluation systems need to be flexible, as good teaching can assume a variety of forms in different contexts.

Indeed, there are potentially numerous ways to classify teachers' orientation to teaching and learning. For instance, Joyce and Weil (1986) discussed 20 models of teaching, which can be grouped into four major categories (Bodnam, 1990)

1. Information processing models, in which the emphasis is on helping students to understand their world by acquiring and organizing information,
2. Student-as-person models, which focus on students' individuality and assume that learning occurs as students view the world from the perspective of their own experiences,
3. Cooperative learning models, which emphasize the social nature of learning and the collective energy that results when students work together, and
4. Behavior theory, which stresses the role of feedback in modifying student behaviors and making progress on clearly defined tasks.

Peterson and Comeaux (1990) investigated three teaching perspectives involving teaching effectiveness, reflectiveness, and constructivism, the latter being highly related to the extent to which instruction is textbook-based. Smith and Neale (1989) discussed four distinct orientations to teaching science, which included an emphasis on either discovery, processes, content mastery, or conceptual change.

Most recently, Kennedy (1991b) reviewed five prominent models of teaching and learning, which "...represent valid and probably enduring differences of view about the nature and purpose of teaching" (p. 4). The models were the additive model, the process model, the conceptual change model, the learning community model, and the transformational model. This classification has some overlap with the categories discussed by Bodnam, for instance, but the correspondence is clearly less than perfect.

The point here is that a good deal has been written about teachers' beliefs and styles, and about how teachers might be classified with regard to these proclivities. However, much less appears to be known about either the numbers or the kinds of teachers that fit the various categories suggested. The purpose of this paper is to present some empirical evidence of how

teachers might be classified according to their general orientation to teaching. This was addressed by determining (a) the extent to which a representative sample of U.S. teachers endorsed each of several different models of teaching and (b) the degree to which teachers could be grouped according to these orientations.

Method

The Models

The orientations (models) we selected were those discussed by Kennedy (1991b). The following brief descriptions of each of the five models were prepared (and presented to study participants in the order shown below):

1. Process model

   Emphasis is on helping students develop skills in the processes and methods of inquiry by which ideas in an academic field are examined, challenged, or defended. Teachers help learners to add new processes/methods to their repertories, thus better approximating the ways in which experts in the field conduct their work.

2. Learning community model

   Emphasis is on socializing students to the values/norms of a field, e.g., the kind of scholarship that is accepted, the kinds of findings that are considered important, the kinds of issues that are worth pursuing, and the kind of group interaction that is expected. Teachers create a community of learners.

3. Additive model

   Emphasis is on covering as much content (facts, concepts, principles, or laws) as possible. Teachers introduce or add content during instruction.

4. Transformational model

   Emphasis is on making academic content, processes, or concepts meaningful to diverse learners by choosing analogies or metaphors that enable students to grasp ideas better. Teachers render subject matter more relevant to students' lives.

5. Conceptual change model

   Emphasis is on helping students form concepts (models, hypotheses, impressions, and other mental images) like those held by experts in the field. Teachers provoke learners to rethink or revise the concepts they hold.

The Sample

In conjunction with a multi-state study to confirm the relevance of test questions being considered for the Academic Skills Assessments component of The Praxis Series: Professional Assessments for Beginning Teachers™, the new teacher licensure tests being developed by Educational Testing Service, a sample of 151 educators was identified from 33 states (those expressing greatest interest in adopting The Praxis Series). The participants were nominated from each state by representatives of the National Association of State Directors of Teacher Education and Certification (NASDTEC), who were given certain parameters to follow when making the nominations. Directors were asked to nominate educators with differing degrees of experience from various instructional levels, from a number of certification areas, and who represented both sexes and several ethnic groups. We asked that all nominees be familiar with the basic academic skills and knowledge needed by entry-level teachers, that most be active elementary or secondary teachers, and that all have at least one year of experience (preferably three to seven years). Approximately one-fifth of all nominees could be either school administrators or faculty of teacher education programs, provided they were familiar with the job requirements of entry-level teachers. NASDTEC representatives were asked to supply at

least twelve nominations per state. From this list, project staff selected a final sample of 151, so as to achieve representation by race, sex, ethnicity, teaching level, and geographic region.

Procedure

Each of the 151 selected educators was invited to attend one of three regional meetings, all expenses paid, in order to evaluate a sample of basic skills test questions. Before each meeting, a set of materials was mailed to each participant to explain the nature of the evaluation and the tasks that would be undertaken. These materials included a form on which participants were asked to (a) indicate the extent to which their teaching corresponded with each of the five models of teaching discussed earlier and (b) rate the importance of a preliminary version of each of 21 performance assessment criteria. For each of the five models of teaching, participants were asked to use a five-point scale (0 = little or not correspondence, 1 = slight correspondence, 2 = moderate correspondence, 3 = good correspondence, and 4 = very good correspondence) to answer the following question:

To what extent does each of the following general families or models of teaching/ learning correspond with the kind of instruction in which you are primarily engaged?

Respondents were also given an opportunity to specify (and to rate) any other model that characterized their approach to teaching.

The performance assessment criteria were dimensions of teacher performance that were being considered for use in Praxis III: Classroom Performance Assessments. i.e., the component designed to assess the beginning teacher's ability to apply basic elements of good teaching. This component will entail, among other methods, observations of beginning teachers and interviews with them. Each participant was given a brief description of the performance assessment component as conceived when the study was conducted and told that the criteria were organized into four major areas (using content knowledge, teaching for student learning, creating an

environment for learning, and teacher professionalism). Each of the 21 criteria (tasks/functions) was listed, and respondents were instructed to use a five-point scale to record their judgments (0 = not important, 1 = slightly important, 2 = moderately important, 3 = important, and 4= very important). The specific question that was posed for each criterion was as follows:

> *Regardless of the subject area they teach, how important is it that all teachers be able to do the following by the end of their first year of teaching?*

Participants were given a postage-paid envelope in which to return their replies. No followup was undertaken. Social security numbers were requested so that responses could be matched with the demographic information that participants provided for the multi-state content relevance study.

Analysis

As an initial step, a univariate analysis was undertaken simply to describe study participants' ratings of the degree to which their approaches to teaching corresponded with each of the five individual models of teaching. However, because respondents' teaching could correspond to more than one model, a multivariate approach was employed also in order to take into account the correlation among the correspondence ratings. Specifically, a cluster analysis was performed to identify homogeneous groups of respondents with respect to their endorsements of each of the five models of teaching. The CLUSTER procedure from the SPSS/PC+ Statistics™ 4.0 (Norusis, 1990) was used to analyze the data. Specifically, an agglomerative hierarchial clustering was employed, in which individual cases were grouped into bigger and bigger clusters. A method suggested by Ward (1963) was used to combine clusters, and a squared Euclidean distance function was employed as the measure of similarity. The

complete solution was run, and the agglomeration schedule was inspected to ascertain the number of clusters to retain. The point at which the agglomeration coefficients became large was used to decide the number of clusters. Because there was no clear break in the size of these coefficients, several solutions were run and the most interpretable one was retained. To verify this judgment, the sample was subsequently split into two random halves, and the final cluster solution was run on each half in order to assess its stability. Finally, the teachers who were assigned to each cluster were examined in terms of their demographic characteristics and their assessments of the importance of the classroom performance assessment criteria.

Results

The Sample

A total of 114 (76%) of those contacted returned completed surveys, and demographic data were available for nearly all of these. A majority of the respondents (54%) were White, 18% were Black, 12% were Hispanic, 10% were Asian American, and 6% were Native Americans. With respect to instructional level, 27% specified K-4, 36% grades 5-8, and 25% grades 9-12. The remainder indicated either higher education or no particular level. With regard to teaching experience, 15% of the respondents said they had been teaching for 1-3 years, 30% for 4-6 years, 19% for 7-9 years, 14% for 10-15 years, and 22% for more than 15 years. The characteristics of the respondents matched those of the initial sample of 151 quite well.

The greatest proportion (32%) listed elementary education as their subject field, while 12% specified science, 9% English language, 9% mathematics, and 5% special education. Performance-related areas like physical education, art, music, vocational education, etc. accounted for 6%, of the sample, and 9% held non-teaching positions. A total of 19% listed some other subject as their specialty.

Descriptive Statistics

Table 1 shows that respondents more often saw a greater correspondence between their teaching and the transformational model than with any other model, with 79% perceiving this model as bearing either a good or a very good correspondence. The additive model was endorsed less frequently than the other models. Still, however, 45% of all respondents felt that this model bore either a good or a very good correspondence to their approach to teaching. Few respondents specified any other models not listed, and the few suggestions for other models were specific to particular individuals.

Correlations among models were generally low. Endorsement of the process model correlated .30 with endorsement of the conceptual change model, and endorsements of the transformational and conceptual change models correlated .33 with one another. Other intercorrelations ranged from -.11 to .19.

Cluster Analysis

Two-, three-, four-, and five-cluster solutions were computed. On the basis of interpretability, the four-cluster solution was retained as the final solution. When rerun on split halves of the sample, this solution yielded reasonably stable results.

Table 2 shows the means of each cluster with regard to respondents' perceptions of the correspondence of their teaching with each of the five models of teaching. The percentages that indicated "good" or "very good" correspondence and "little or no" or "slight" correspondence are also given. The highlighted values are ones that are unusual in terms of deviation from the row and column medians.

Cluster 1 (N = 46) exhibits a relatively high endorsement of each of the five models of teaching and a somewhat higher endorsement of the learning community model than any of the other clusters. Teachers in this cluster appear to be eclectic in their approach, regarding their

classes as learning communities. (It is possible that this "eclectic" cluster is in part an artifact of the clustering procedure, as cluster analysis may sometimes identify a general dimension.)

Cluster 2 (N = 21) is characterized by a generally lower endorsement of models than is Cluster 1, but mainly by its high endorsement of the additive model and its especially low endorsement of the conceptual change model. This cluster also exhibited relatively less endorsement than other clusters of the process model. Teachers in this cluster appear to stress imparting information to students, perhaps with somewhat less attention to the concepts that students may hold.

Cluster 3 (N=28) is characterized primarily by its very low frequency of endorsement of the additive model (lowest of any cluster) and, secondarily, by its relatively low endorsement of the conceptual change model. Teachers in this cluster did not regard the covering of content as a major focus of their teaching.

Cluster 4 (N=16) also exhibits very little endorsement of the additive model, but in contrast to Cluster 3, exhibits a very high endorsement (higher than any other cluster) of the conceptual change model. Teachers in this cluster emphasize the development of concepts and de-emphasize content coverage per se.

How similar are these clusters? When we continued to merge these four clusters, they combined as follows. Clusters 3 and 4 coalesced to form a cluster of teachers who gave low priority to imparting information (low additive). Next, Clusters 1 and 2 combined to yield a cluster that is distinguished from the combination of Clusters 3 and 4 by its much higher endorsement of the additive model. Thus, the clustering results strongly suggest that the extent to which teachers see their roles as "covering content" is perhaps the major distinguishing dimension of the "taxonomy" that has been revealed here.

Background Characteristics of Cluster Members

The background characteristics of individuals assigned to each of the four clusters were examined -- both to understand better the nature of the clusters and to confirm that the clusters represented more than chance groupings. Table 3 shows the characteristics of each cluster in terms of sex, instructional level, years of experience, and subject taught. As is apparent, these characteristics were largely unrelated to cluster membership. The only exception was the relationship of cluster membership to subject taught (which was examined for those subjects taught by 10 or more teachers). The relationship was due mainly to the disproportionately high number of mathematics teachers in Cluster 2 and to some degree by the relatively high proportion of elementary teachers in Cluster 3. The clusters appear to differ also with regard to number of years of teaching experience, but the differences among clusters was not statistically significant. $F(3, 106) = 2.2$, $.05 < p < .10$.

Ratings of Teaching Tasks/Functions by Clusters

Table 4 displays the percentages of educators in each cluster who rated each of the preliminary performance assessment criteria as important or very important. Percentages that are unusually high or low in relation to row and column medians have been highlighted. Analyses of variance revealed significant differences among clusters on ratings of 7 of the 21 tasks/functions (Table 5).

Cluster 1 members gave higher ratings of importance (relative both to their ratings of other criteria and to the ratings of criteria by other clusters) to (a) demonstrating an understanding of the connections between past, current, and future content, (b) making the physical environment conducive to learning, and (c) becoming familiar with relevant aspects of students' backgrounds and experiences.

Cluster 2, in contrast, gave quite low ratings to the latter two criteria concerning the physical environment and familiarity with students' backgrou.. .. The ratings of this cluster were also low with regard to the importance of (a) helping students to activate relevant aspects of their prior knowledge, experiences, and cultural resources, and (b) explaining how insights from instructional experiences can be used to improve instruction.

Cluster 3 was notable only with regard to its low ratings of the importance of understanding the connections between content studied previously, current content, and that yet to be studied. Like cluster 3, cluster 4 also gave relatively low ratings of importance to demonstrating an understanding of the connections between content. Cluster 4 members also gave low ratings to creating a purposeful and well-functioning learning community with well-understood routines.

Summary and Discussion

A small, multi-state sample of educators, mostly practicing teachers, was asked to indicate the extent to which each of five orientations to, or "models" of, teaching corresponded with the kind of instruction in which they were engaged. A "transformational" orientation was perceived by respondents as being a good or very good description of their own teaching more often than were any of four other orientations, and very few teachers saw this model as having little correspondence to their teaching. This model was defined as emphasizing "making academic content, processes, or concepts meaningful to diverse learners by choosing analogies or metaphors that enable students to grasp ideas better." An "additive" model, stressing content coverage, was seen as having the least correspondence, although even this model was rated as having a good or very good correspondence by 45% of the sample. Three other models focusing on (a) developing skills in processes and methods of inquiry (a process model), (b) socializing students to the values/norms of a field (a learning community model), and (c) helping students

form concepts (a conceptual change model) were seen as having intermediate levels of correspondence.

In order to take into account the relationships among models, respondents were classified, using a statistical clustering procedure, into four mutually exclusive categories or "clusters" on the basis of the similarity their ratings of each model. The largest cluster (41% of the sample) was characterized as having an "eclectic" orientation to teaching, by virtue of cluster members' generally high endorsements of each of the five models. This cluster was not distinguished by any particular background characteristics of its members. It was, however, somewhat different from other clusters with regard to the slightly higher degree of importance attached to some teacher tasks, particularly three having to do with (a) understanding connections between previous, current, and future content, (b) making the physical environment conducive to learning, and (c) becoming familiar with students' backgrounds and previous experiences.

A second cluster, comprising 19% of the sample, was distinguished mainly by its high endorsement of an "additive" model -- an approach in which the emphasis is on covering as much content as possible -- and, secondarily, by the low frequency with which it endorsed a "conceptual change" model -- one in which the emphasis is on concept formation. This cluster included a somewhat higher proportion of mathematics teachers than did the other clusters, perhaps because many mathematics teachers do in fact emphasize the imparting of facts and algorithms. This cluster was also characterized by its members' perceptions that certain teacher functions are relatively less important -- with regard to both other tasks and to the perceptions of educators in other clusters. These tasks concerned (a) helping students to activate their previous knowledge, skills, experiences, etc., (b) becoming familiar with students' prior

knowledge, skills, experiences and cultures, (c) making the physical environment conducive to learning, and (d) using insights from instructional experiences to improve subsequent instruction.

A third cluster, consisting of 25% of the sample, was defined primarily by members' perception that an additive model bore very little correspondence to their teaching. Elementary teachers were represented in slightly greater numbers in this cluster than in others. These teachers gave relatively low ratings of the importance to understanding the connections between content.

The final cluster (14% of the sample), when compared with others, tended to emphasize the formation of concepts and the process of helping learners to rethink or revise their conceptions. Like cluster 3, members of this cluster perceived very little correspondence between their teaching and an additive approach. These teachers had no particular distinguishing background characteristics. They did, however, have a relatively low opinion of (a) the importance of creating a learning community with convenient and well-understood classroom routines, and (b) the need to understand the connections among content studied at various points in time.

In summary, this exploratory study has provided some information about one possible way in which teachers might be classified. We do not pretend to assume, of course, that teachers can be easily categorized, especially on the basis of a limited sample of (primarily elementary level) teachers and less-than-comprehensive information about the sample. The results make this perfectly clear. A larger, more diverse sample of teachers, and a greater number of more specific indicators of teachers' orientations to teaching would have been highly desirable. Nor do we presume that the method used here is the only, or even the most appropriate, way in which teacher beliefs can be elicited. As Kagan (1992) has noted, there are several available alternatives to questionnaire surveys. Nonetheless, the results do, we think,

provide some additional insights into teachers' beliefs and orientations, which are important for the reasons discussed at the outset.

It is significant that most responding teachers perceived more than one of the models as corresponding to their teaching. This result is consistent with the belief that there is no single "right way" to teach and with a view of teaching as one in which teachers must continually adjust their strategies to the needs of students (Dwyer & Villegas, 1992). It is perhaps also noteworthy that, despite significant recent advances in cognitive psychology, and the implications for teaching (Wittrock, 1991), an additive model is still perceived by a significant minority of teachers to characterize their orientation to teaching quite well. The approach of a somewhat smaller group of teachers (nearly one of every five in our sample), was in fact best characterized by a reliance on an additive model. Contrary to what might be expected, less experienced (and presumably more recently trained) teachers were as likely as more experienced teachers to endorse an additive approach to teaching. Perhaps there is some legitimacy to Perkins and Salomon's (1989) concern that despite the efforts to reform education, much educational practice "...remains doggedly committed to imparting facts and algorithms" (p. 23). This seems true at least for a minority of the teachers in our sample. Perhaps, as has been suggested (Feltovich, Spiro, & Coulson, 1992), a curricular stance in which content coverage prevails may result from pressures on students and teachers to move rapidly through material: "What will future teachers think if my students haven't even heard of some topics?" As these authors suggest, however, an emphasis on content coverage may be quite appropriate for some topics, as not all content needs to be understood at the same level of depth.

With respect to practical applications, a classification of teachers might have some utility in considering the results of the kind of job analyses that are undertaken to determine what beginning teachers need to know or be able to do, in order to build defensible teacher licensure

assessments. Currently, teachers' opinions are examined for various subgroups according to ethnicity, geographic location, school setting, etc.. Perhaps a further differentiation according to orientation to teaching would provide additional useful information on which to base decisions about the design of teacher licensure assessments and about other aspects of teacher reform.

Classification, as Aldenderfer and Blashfield (1984) have noted, is both a basic human activity and one that is important to the advancement of science: from classification come the concepts necessary to develop scientific theory. Compared with efforts in the physical and biological sciences, classification is a relatively recent endeavor in the social sciences (Mezzich & Solomon, 1980). It appears to be an even newer focus in the study of teaching. The study described here represents a modest attempt to classify teachers with respect to their general orientations to teaching. Perhaps additional attempts using (a) alternative models of teaching (accompanied by more comprehensive characterizations of the models), (b) different methods of assessing beliefs, and (c) more specific indications of teacher behaviors will result in a better understanding of both teachers and their approaches to teaching.

References

Aldenderfer, M. S., & Blashfield, R. K. (1984). *Cluster analysis.* Beverly Hills, CA: SAGE Publications.

Bodnam, M. (1990, June). *A synopsis of Joyce and Weil's models of teaching.* Unpublished manuscript. Princeton, NJ: Educational Testing Service.

Brookhart, S. M., & Freeman, D. J. (1992). Characteristics of entering teacher candidates. *Review of Educational Research, 62,* 37-60.

Dwyer, C. A., & Villegas, A. M. (1992). *Guiding conceptions and assessment principles for The Praxis Series: Professional Assessments for Beginning Teachers™.* Princeton, NJ: Educational Testing Service.

Feltovich, P. J., Spiro, R. J. & Coulson, R. L. (1992). Learning, teaching, and testing for complex understanding. In N. Frederiksen, R. Mislevy, & I. Bejar (Eds). *Test theory for a new generation of tests.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Joyce, B. B., & Weil, M. (1986). *Models of teaching.* Englewood Cliffs, NJ: Prentice Hall.

Kagan, D. M. (1992). Implications of research on teacher belief. *Educational Psychologist, 27,* 65-90.

Kennedy, M. M. (1991a). Policy issues in teaching education. *Phi Delta Kappan, 72,* 658-665.

Kennedy, M. M. (1991b). Merging subjects and students into teaching knowledge. In M. M. Kennedy (Ed.) *Teaching academic subjects to diverse learners.* New York: Teachers College Press.

Messick, S. (Ed.). (1976). *Individuality in learning: Implications of cognitive styles and creativity for human development.* San Francisco: Jossey-Bass.

Mezzich, J. E., & Solomon, H. (1980). *Taxonomy and behavioral science: Comparative performance of grouping methods.* New York: Academic Press.

Murnane, R. J. (1991). The case for performance-based licensing. *Phi Delta Kappan, 73,* 137-142.

Norusis, M. J. (1990). *SPSS/PC+ Statistics™ 4.0 for the IBM PC/XT/AT and PS/2.* Chicago: SPSS, Inc.

Perkins, D. N., & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher, 18,* 16-25.

Peterson, P. L., & Comeaux, M. A. (1990). Evaluating the systems: Teachers' perspectives on teacher evaluation. *Educational Evaluation and Policy Analysis, 12,* 3-24.

Richardson, V., Anders, P., Tidwell, D., & Lloyd, C. (1991). The relationship between teachers' beliefs and practices in reading comprehension instruction. *American Educational Research Journal, 28,* 559-586.

Smith, D., & Neale, D. C. (1989). The construction of subject matter knowledge in primary science teaching. *Teaching and Teacher Education, 5,* 1-20.

Villegas, A. M. (1992, February). *The competence needed by beginning teachers in a multicultural society.* Paper prepared for the Annual Meeting of the American Association of Colleges of Teacher Education, San Antonio, TX.

Ward, J. (1963). Hierarchial grouping to optimize an objective function. *Journal of the American Statistical Association, 58,* 236-244.

Wittrock, M. C. (1991). Cognition and testing. In M. C. Wittrock & E. L. Baker (Eds.), *Testing and cognition.* Englewood Cliffs, NJ: Prentice Hall.

Table 1

Endorsement of Each of Five Models of Teaching

Model	Model Number	Mean	SD	Correspondence	
				% Good or very good	% Little or no, or slight
Transformational	4	3.2	0.9	79	6
Process	1	2.8	1.0	68	11
Learning community	2	2.8	1.0	64	11
Conceptual change	5	2.5	1.2	55	23
Additive	3	2.2	1.3	45	28

Note. Ratings were made on a 0 - 5 scale with 0 = Little or no correspondence to 5 = Very good correspondence.

Table 2

Clusters of Teachers in Terms of Endorsement of Five Models of Teaching

Teaching Model	Cluster 1 (N=46)	2 (N=21)	3 (N=28)	4 (N=16)	Median
		Mean Ratings on Importance Scale			
Transformational	3.6	3.0	2.5	3.6	3.3
Process	3.1	2.0	3.1	2.6	2.8
Learning community	3.4	2.0	2.9	2.1	2.5
Conceptual change	3.0	1.4	1.9	3.6	2.5
Additive	2.9	3.3	0.9	1.1	2.0
Median	**3.1**	**2.0**	**2.5**	**2.6**	
		Percentage Responding Good or Very Good Correspondence			
Transformational	91	76	54	94	84
Process	76	33	79	69	73
Learning community	91	24	61	44	53
Conceptual change	72	14	32	100	52
Additive	70	86	0	0	35
Median	**76**	**33**	**54**	**69**	
		Percentage Responding Little or No, or Slight Correspondence			
Transformational	2	0	21	0	1
Process	0	33	7	13	10
Learning community	0	24	7	31	15
Conceptual change	4	57	39	0	21
Additive	0	0	75	63	32
Median	**0**	**24**	**21**	**13**	

Note. Standard deviations of ratings ranged from .5 to 1.2. Unusual values, in terms of deviations from row and column medians, are shaded.

Table 3

Background Characteristics of Cluster Members

Characteristics	Cluster 1 (N=46)	2 (N=21)	3 (N=28)	4 (N=16)	TOTAL (N=111)
Ethnicity					
% White	50	48	57	69	54
		$\chi^2(3) = 2.5$, n.s.			
Instructional level %					
K - 4 (N=29)	24	25	25	31	26
5 - 8 (N=39)	36	55	25	31	36
9 - 12 (N=27)	24	15	32	25	25
		$\chi^2(6) = 4.2$, n.s.			
Years of teaching experience					
Median	6.3	4.1	8.0	12.5	7.0
Mean	8.7	8.2	11.1	14.1	10.0
SD	6.2	7.4	7.8	12.1	8.1
		$F(3,106) = 2.2$, n.s.			
Subject taught %					
Science (N=13)	13	5	11	19	12
Elementaray Ed. (N=36)	24	29	54	25	32
English (N=10)	15	5	7	0	9
Mathematics (N=10)	2	29	4	13	9
		$\chi^2(9) = 21.5$, $p<.05$			

Table 4

Percentages of Respondents by (Cluster) who Judged Each Task/Function to be Important or Very Important

Task/Function	Domain	Total (N=114)	Cluster 1 (N=46)	Cluster 2 (N=21)	Cluster 3 (N=28)	Cluster 4 (N=16)
Make content comprehensible to students	Teach/Learn	99	98	100	100	100
Create a classroom climate the ensures equity and respect for and among students, and between students and the teacher	Environ.	98	100	100	96	94
Establish and consistently maintain clear standards of behavior in order to ensure an appropriate climate for learning	Environ.	97	100	100	96	94
Set high expectations for each student, make learning expectations clear to students, and help students accept responsibility for their own learning	Teach/Learn	95	98	90	93	94
Reflect on the extent to which instructional goals were met	Prof.	95	96	90	100	88
Demonstrate application of content knowledge through accurate instruction	Cont. Know.	94	96	90	96	88
Monitor students' understanding of content through a variety of means, provide feedback to students to assist learning, and adjust learning activities as the situation demands	Teach/Learn	93	96	81	96	94
Use instructional time effectively and efficiently	Teach/Learn	93	93	86	96	93
Create a purposeful and well-functioning learning community with convenient and well-understood classroom routines that facilitate learning	Environ.	93	100	86	96	75
Encourage students to extend their own thinking	Teach/Learn	92	93	86	93	94
Establish and maintain rapport with students in ways that are appropriate to the students' developmental levels	Environ.	92	91	95	93	94
Create or select appropriate instructional material/other resources and learning activities that are clearly linked to the goals or intents of the lesson	Cont. Know.	91	93	86	93	88
Help students activate relevant aspects of their prior knowledge, skills, experiences, and cultural resources in order to promote learning	Teach/Learn	91	98	76	93	88
Create or select appropriate evaluation strategies that are clearly linked to the goals or intents of the lesson	Cont. Know.	90	91	90	93	81
Demonstrate an understanding of the connections between the content that was studied previously, the current content, and the content that remains to be studied in the future	Cont. Know.	89	98	90	79	75
Demonstrate acceptance of responsibility for student learning	Prof.	86	93	76	82	80
Build professional relationships with colleagues to share teaching insights and coordinate learning activities for students	Prof.	84	89	81	79	81
Make the physical environment as conducive to learning as possible	Environ.	84	96	62	86	81
Communicate with families regarding student learning and, where appropriate, interact effectively with the community	Prof.	84	89	76	79	88
Become familiar with relevant aspects of students' prior knowledge, skills, experiences, and cultures	Teach/Learn	83	96	62	75	88
Explain how insights gained from instructional experiences can be used subsequently to improve instruction	Prof.	79	89	57	79	75
Median		92	96	86	93	88

Domain:
Cont. Know. = Using content knowledge
Teach/Learn = Teaching for student learning
Environ. = Creating an environment for learning
Prof. = Teacher professionalism

Table 5

Mean Ratings of Task/Functions
for Which there were Significant Differences Among Clusters

Task/Function	Cluster 1	2	3	4	p
Reflect on the extent to which instructional goals were met	3.6	3.3	3.4	3.1	$p<.05$
Help students activate relevant aspects of their prior knowledge, skills, experiences, and cultural resources in order to promote learning	3.6	3.0	3.4	3.3	$p<.01$
Demonstrate an understanding of the connections between the content that was studied previously, the current content, and the content that remains to be studied in the future	3.5	3.0	3.1	3.1	$p<.05$
Build professional relationships with colleagues to share teaching insights and coordinate learning activities for students	3.5	3.1	3.1	2.9	$p<.05$
Make the physical environment as conducive to learning as possible	3.5	2.8	3.3	3.1	$p<.01$
Become familiar with relevant aspects of students' prior knowledge, skills, experiences, and cultures	3.6	2.8	3.0	3.3	$p<.001$
Explain how insights gained from instructional experiences can be used subsequently to improve instruction	3.4	2.8	3.0	3.0	$p<.05$

Note. Standard deviations ranged from .5 to 1.1. Twenty of 28 were between .6 and .8.

53905-08595 • Y102M1.2 • 271816