DOCUMENT RESUME

ED 364 599 TM 020 847

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TITLE Understanding Problems Faced by Classroom Teachers: An Application of Q-Methodology.
PUB DATE Nov 93
NOTE 41p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (22nd, New Orleans, LA, November 9-12, 1993).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Classroom Techniques; Comparative Analysis; *Data Collection; Educational Environment; *Elementary School Teachers; Elementary Secondary Education; Factor Analysis; *Problems; *Q Methodology; *Secondary School Teachers; Teacher Attitudes; Test Interpretation
IDENTIFIERS *Problems of Teaching Survey; Teacher Surveys; Varimax Procedures

ABSTRACT

This paper examines the effects of two types of data collection strategies on Q-technique factor analysis. The subjects (classroom teachers) were divided into two groups: Group 1 (n=21) and Group 2 (n=23). The subjects responded to an instrument designed to measure the degree to which certain aspects of teaching are viewed as problems; the instrument is "The Problems of Teaching Survey" (POTS). Data were collected from Group 1 using the traditional Q-sort method. Data were collected from Group 2 using the traditional Q-sort and mediated-ranking techniques. Principal components analysis was used to extract factors from each group, and the factors were rotated to the varimax criterion. Factor scores were also used in the interpretation of the factors. The results indicated that the mediated-ranking data collection strategy facilitates the most meaningful interpretation of the factors. The 51 items of the POTS are listed. (Contains 13 references.) (Author)

Understanding Problems Faced by Classroom Teachers: An Application of Q-Methodology

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Paper presented at the annual meeting of the Mid-South Educational Research Association, New Orleans, November 10, 1993.

Abstract

This paper examines the effects of two types of data collection strategies on Q-technique factor analysis. The subjects (classroom teachers) were divided into two groups: Group 1 (n=21) and Group 2 (n=23). The subjects responded to an instrument designed to measure the degree to which certain aspects of teaching are viewed as problems; the instrument is "The Problems of Teaching Survey" (POTS). Data were collected from Group 1 using the traditional Q-sort method. Data were collected from Group 2 using the traditional Q-sort and mediated-ranking techniques. Principal components analysis was used to extract factors from each group, and the factors were rotated to the varimax criterion. Factor scores were also used in the interpretation of the factors. The results indicated that the mediated-ranking data collection strategy facilitates the most meaningful interpretation of the factors. The 51 items of the POTS are listed.

Factor analysis is often used by researchers in the social sciences because of its ability to simplify complex relationships of variables into manageable components called factors. Carr (1992) emphasizes that, in general, factor analysis involves the reduction of a large number of variables to a smaller number of constructs or "underlying" variables that preserve most of the information from the original variable set. As Cattell (1988) states, factor analysis is useful as a means of creating concepts, not merely utilizing them or checking their fit to new data. Moreover, the versatility and parsimony of factor analysis make it an attractive research tool. Kerlinger (1986, p. 569) asserts the importance of factor analysis, "Because of its power, elegance, and closeness to the core of scientific purpose, factor analysis can be called the queen of analytic methods."

Kim and Mueller (1978) state that there are four major steps in the factor analysis process: (a) data collection and preparation of the relevant covariance matrix, (b) extraction of the initial factors, (c) rotation to a terminal solution, and (d) interpretation and construction of factor scales which will be used in

further analyses. Regarding preparation of the covariance matrix, all factor analyses involve examining relationships among either people, measurement occasions, or variables. Cattell (1988) addresses this issue in his "data box", a metaphor illustrating the relationships between the three rotential modes of data collection: people, occasions, and variables. Though it is possible to include all three modes of data in the factor analysis (Carr, 1992), most researchers choose to simultaneously examine the relationship between only two of the three modes, one of which is factored across the other. After the researcher has chosen the two modes to examine, the ultimate goal of the factor analysis is to extract the fewest number of factors that will account for the most variance in the original matrix of association among the factored entities.

Cattell (1952) describes the different types of factor analyses that may occur once the researcher has selected the two modes of data. Cattell discusses O-technique, P-technique, Q-technique, R-technique , S-technique, and T-technique. This paper will focus primarily on Q-technique; however, the reader is

encouraged to refer to Cattell's work for a general introduction to the other aforementioned techniques.

R-technique, the most commonly used mode of factor analysis, involves factoring items or variables across people. Daniel (1989) explains that R-technique essentially examines which items within a data set identify certain postulated constructs. The inverse of this technique is known as Q-technique. In Q-technique, people are factored across items or variables. Hence, Comrey and Lee (1992) refers to Q-technique as "inverse analysis" and Nunnally (1978) calls it "transpose analysis." Carr (1992) indicates that Q-technique is useful for examining groups of people across variables such as attitudes, preferences, or thinking behaviors. Kerlinger (1986) explains that in Q-methodology those subjects who respond to a set of items in much the same way will form person or factor clusters.

Collecting Q-technique Data

Three types of data collection may be used in Q-technique. The first type is the traditional method of data collection called the Q-sort. Thompson (1980) terms this type of data collection "conventional-

sorting strategy." It requires the subject to sort out a number of (usually 60 to 100) statements or words on cards on a continuum ranging from one extreme such as "strongly agree" or "most like me" to the other extreme such as "strongly disagree" or "least like me." Kerlinger (1986) maintains that the number of cards used in a Q-sort should not be less than 60 and usually no more than 100 in order to maintain reliability and statistical stability of the instrument. Thompson (1981) recommends using the following formula to determine the maximum number of subjects used in the Q-sort: (# of items)/2 - 1 = # of participants. For example, if the Q-sort involves sorting 60 items, the researcher would want no more than 29 persons to serve as the sample.

In a traditional Q-sort, the subject is forced to place a certain number of cards in each category along the continuum resulting in a normal or quasi-normal curve. Examples of how the researcher can obtain this normal or quasi-normal distribution are given by Kerlinger (1986). For instance, if a Q-sort consists of 90 items, the researcher might determine that the cards be sorted into 11 categories with a range from

"most approve" to "least approve", and with levels of approval in between. The 11 stacks, respectively, might contain the following number of items: 3, 4, 7, 10, 13, 16, 13, 10, 7, 4, 3 (Kerlinger, 1986 p. 509). Each category is assigned a value ranging from 0 for the leftmost category to the number of categories minus 1 (or the number of categories) for the rightmost category.

The two types of Q-sorts are differentiated based on the selection of the variables to be sorted, and are called unstructured and structured. The unstructured Q-sort involves a group of items from one domain such as social values; however, the items are not distinguished any further in the Q-sort or analysis. The items in a structured Q-sort are from one domain; however, they are grounded in a particular theory of that domain, and the researcher partitions the items of the Q-sort to reflect that particular theory (Kerlinger, 1986). Kerlinger (1986) provides the following example of the structured Q-sort. A child psychologist theorizes that as children get older, control of their behavior becomes more internal. The psychologist would structure a Q-sort as *internal-*

external, with half the items reflecting internal control and half external control.

Thompson (1980) suggests a second method for collecting Q-technique data using a "mediated-ranking" strategy. Mediated ranking involves having the subjects rank order the sorted statements under each category. After the subjects have completed a traditional Q-sort, they would then rank the items under each category by level of importance or agreement. Since each item would have an unique ranking, this would result in greater item variance and, ultimately more reliable data. Consequently, the person factors from such data should be more stable.

The last method of data collection in Q-technique is called the "unnumbered graphic scale" (Thompson, 1981). The subject is required to make a mark through an unnumbered continuum for each item to illustrate the respondent's opinion associated with that particular item (See Figure 1). The researcher converts the respondents' ratings of items to rank data by giving the leftmost mark a rank of "1" and the rightmost item the rank of the highest number of items on the Q-sort. The items between the two extremes would be ranked

accordingly (Daniel, 1991). The major advantage of this strategy is that it is more time efficient for the subjects, while still yielding more score variance and thus, theoretically, score and factor reliability.

Insert Figure 1 about here

Purpose

The purpose of the present study was to demonstrate various issues relative to the use of Q-methodology, with a particular focus on the effects of data collection strategies on the results of the analysis. The traditional Q-sort and mediated-ranking strategies were used to collect the data presented in this paper. A comparison of the results is offered, focusing on the effectiveness of each data collection technique in the identification of distinct clusters of people.

Instrumentation

The instrument, "Problems of Teaching Survey," used to collect data for purposes of the present study was developed by Daniel and Cutrer (1992). Daniel and Cutrer developed 51 Likert-type problem statements

associated with classroom teaching and administered them to 291 teachers. Construct validity of the instrument was investigated using exploratory factor analysis. The results of the factor analysis indicated that the 51 problem statements could be grouped into eight meaningful categories or factors. Those factors were: problems with working conditions, lack of respect, administration-related problems, emotional distress, student-related problems, parent-related problems, inadequacy of salary/benefits, and interpersonal problems. These factors corresponded very closely with the expected subscales of the Problems of Teaching Survey (POTS) (Daniel & Cutrer, 1992), therefore, making the POTS an attractive tool for further research in the field of teaching.

Procedures

POTS data were collected from two sets of subjects who were graduate students in education at a given university. All of the subjects were classroom teachers. The first set of subjects (n=21) responded to the POTS items via the traditional Q-sort method, and the second set of subjects (n=23) responded via both the Q-sort and the mediated-ranking techniques.

The number of subjects included in proportion to the number of items chosen was supported by Thompson's formula to determine the maximum number of persons to be used in a Q-methodology sample (51/2 - 1 = 25.5) Each subject completed a 51 item survey titled "Problems of Teaching Survey" (Daniel & Cutrer, 1992). The items presented in the survey are listed in Appendix A.

Each of the fifty-one problem statements was placed on a card. For the traditional Q-sort, the subjects sorted the cards into seven piles on a continuum ranging from "This issue is not a problem at all for me" to "This issue is a very serious problem for me." The continuum was scaled from 1 to 7. Because of the use of a structured Q-sort, the subjects were limited to the number of items that could be placed in a given category. The number of items in each of the seven piles was exactly 4, 6, 9, 13, 9, 6, 4, respectively, thus approximating a normal distribution. The coding sheet used to collect the data from the traditional Q-sort is shown in Appendix B.

The second sample also completed a traditional Q-sort using the "Problems of Teaching Survey." They were then required to rank-order the items in each pile, which resulted in a "mediated-ranking" of the items. For scoring purposes, the items were ranked 1 to 51, with 1 being the most serious problem and 51 being the least serious problem. The coding sheet used to collect data from the mediated strategy is shown in Appendix C.

Results

All three sets of data were analyzed using the principal components factor analysis procedure in $SPSS_I$. In each of the analyses, a correlation matrix among the subjects across the variables was generated.

The principal components analysis was then used to extract factors from each of the correlation matrices. Based on the scree plots generated by each analysis, four and five factor solutions were attempted for all three data sets. A four-factor solution was interpreted for Group 1 data while five-factor solutions were interpreted for the two Group 2 data sets. These solutions were selected because they were deemed the most interpretable.

The first analysis was run on Group 1 (n=21), subjects who had responded to the POTS items via the traditional Q-sort. Four factors were extracted from the correlation matrix generated in the analysis. These four factors accounted for 49.4% of the total variance among the 21 subjects. In factor analysis, a prerotated factor matrix is first generated. Carr (1989) explains that the prerotated factor matrix contains coefficients called pattern coefficients. Carr also states that these pattern coefficients explain how much weight each subject is assigned in connection with each factor. These factors are also structure coefficients, since the estimated principal component factors are orthogonal.

The factors were then rotated to the varimax criterion. This was done to facilitate the interpretation of the factors. Table 1 presents the factor matrix after the varimax rotation.

Insert Table 1 about here

Subjects 3, 4, 9, and 20 were more strongly associated with Factor I. Subjects 1, 12, 13, and 16

were more strongly associated with Factor II. Subjects 6, 8, 14, and 15 were strongly associated with Factor III. Subjects 7, 10, and 11 were strongly association with Factor IV. Subject 2 was evenly associated with all four factors. Subject 17 was almost equally associated with both Factor I and Factor III. Subject 19 was associated with both Factor I and Factor II.

The principal components analysis was repeated on Group 2 (n=23) which used the traditional Q-sort. Five factors extracted from the correlation matrix accounted for 60.2% of the total variance among the 23 subjects. The factors were then rotated using the varimax procedure. Table 2 presents the factor matrix after the varimax rotation.

Insert Table 2 about here

Subjects 2, 3, 9, 15, 23 were strongly associated with Factor I. Subjects 1, 6, 8, 11, and 16 were strongly associated with Factor II. A strong association with Factor III is indicated for Subjects 13, 14, 18, 20, and 21. Subjects 10, 12, 17, and 19 were strongly associated with Factor IV. Subjects 4,

5, and 22 exhibit an association with Factor V. Subject 7 was associated with both Factors II and III, and Subject 11 was associated with Factors II and IV.

The third principal components analysis was run on the data collected using the mediated-ranking strategy from Group 2. Five factors were extracted from the correlation matrix accounting for 61.0% of the total variance among the 23 subjects.

The varimax procedure was used to rotate the factors to facilitate easier interpretation. The rotated factor matrix for this group is presented in Table 3.

Insert Table 3 about here

A close association with Factor I was found for subjects 1, 6, 8, and 16. Subjects 3, 7, 9, 14, 20, and 23 were closely associated with Factor II. Subjects 2, 13, 15 and 21 were associated with Factor III. Subjects 10, 12, 17 and 19 were associated with Factor IV. Subjects 4 and 22 closely associated with Factor V. Subject 5 was associated with Factors II, III, and V. Subject 9 was closely associated with

Factors II and III. Subject 11 was associated with Factors I and IV, and Subject 18 was identified with Factors I and II.

The factors were examined in regards to identifying characteristics. Regression factor scores were interpreted for each item to determine if the item contributed heavily to distinguishing persons in one or more of the given factors. If an item's factor score was markedly different from zero (i.e., greater than |1.00|), then the item was interpreted as distinguishing the people constituting that factor from the persons constituting other factors. Subjects associated with a given factor sorted and/or ranked items similarly. For the analyses using the traditional Q-sort data, if the item factor scores were highly negative, then those item were rated as unproblematic, and if the item factor scores were highly positive, then those items were rated as very serious problems. For the analysis using the mediated-ranking data, highly negative item factor scores were viewed as the most serious problems, while those item factor scores that were rated highly positive were viewed as unproblematic. The categories of the POTS presented by Daniel and Cutrer (1992) were

used to identify item themes which characterized responses of individuals across the factors. A brief summary of these themes as related to person factors in each analysis follows.

Group 1

Group 1 (n=21) used the traditional Q-sort to complete the "Problems of Teaching Survey". Four factors were extracted in the analysis. The regression factor scores for Group 1 are presented in Table 4. Factor I persons can be classified as teachers primarily concerned with student-related issues and working conditions. The subjects forming Factor I were satisfied with salary/benefit, emotional, and interpersonal issues. By contrast, the emotional issues of teaching were of the greatest concern to the subjects associated with Factor II. Parent/community concerns, student-related issues and salary/benefit issues were not viewed as problem areas for the subjects defining Factor II. Factor III persons can be described as teachers primarily concerned with administration related problems, while the subjects associated with Factor IV felt that salary/benefit issues were the most problematic. Factor IV subjects

also believed that working conditions were acceptable.

Insert Table 4 about here

Group 2 - Q-Sort Data

Group 2 (n=23) completed the POTS first using the traditional Q-sort. Five factors were extracted from the analysis. The regression factor scores for Group 2 - Traditional Q-Sort are presented in Table 5. Factor I can be defined as teachers strongly concerned with salary/benefit and respect issues. The subjects associated with Factor I felt that administration-related issues were not a major problem. Student-related concerns was the most serious problem area for the subjects associated with Factor II, although salary/benefit and administration-related issues were not viewed as problem areas for the subjects linked with Factor II. Student-related concerns and parent/community-related issues were viewed as the most serious problem areas for the Factor III subjects. Salary/benefit issues and working conditions were not seen as problem areas by these subjects. The emotional aspect of teaching was viewed as the most serious

problem area for the Factor IV subjects. Opinions on working conditions were mixed for the Factor IV subjects, with some working condition items having high and others having low factor scores. Finally, the Factor V subjects felt that salary issues, student-related concerns and administration-related issues were the most serious problem areas. Respect issues were seen by these subjects as satisfactory.

Insert Table 5 about here

Group 2- Mediated Ranking Data

Group 2 also used the mediated-ranking technique to complete the POTS. Five factors were extracted accounting for 61.0% of the variance. The regression factor scores for Group 2 - Mediated Ranking Technique are presented in Table 6. Factor I is defined by teachers primarily concerned with student-related issues. Salary/benefit issues and administration-related concerns were not seen as major problem areas by these subjects. The Factor II subjects were primarily concerned with student-related issues, administration-related concerns, and parent/community-

related issues. These subjects viewed salary/benefit issues and working conditions as unproblematic. Salary/benefit issues and respect concerns were viewed as the most serious problem areas for the Factor III subjects. Administration-related issues and interpersonal concerns were not viewed as problem areas by this group. The emotional aspects of teaching were viewed as the most serious problems by the Factor IV subjects. The Factor IV subjects had mixed feelings about working conditions. Finally, the Factor V subjects viewed working conditions as the most serious problem area. Respect issues were viewed by this group as satisfactory and not problematic.

Insert Table 6 about here

Discussion

The purpose of this paper was to compare the results of two types of data collection, the traditional Q-sort and mediated-ranking, to determine the effectiveness of each technique in identifying unique clusters of people on the Problems of Teaching Survey (POTS).

First, the analyses across the two groups using the traditional Q-sort may be examined. The four factors extracted from the data collected from Group 1 (n=21) accounted for 49.4% of the variance among the subjects. The first four factors extracted from the data collected from Group 2 (n=23) accounted for 52.3% of the variance. Since five factors were interpreted in the analysis on the data collected from Group 2, an examination of the five factors from both groups is warranted. An examination of the first five factors extracted from the data collected from Group 1 (n=21) indicated 56.2% of the total variance was accounted for by these factors. The five factors extracted from the data on Group 2 (n=23) accounted for 60.2% of the variance. The difference in the amount of variance accounted for (49.4% vs 52.3%, and 56.2% vs 60.2%, respectively) could be attributed to differences in the levels of students with whom teachers worked. The majority of subjects in Group 1 had experience teaching at the elementary level. The majority of subjects in Group 2 had experience teaching at the high school level.

An examination of the themes that emerged across the samples indicated that the subjects were more concerned with issues that directly impact the teaching process such as student-related issues, as indicated by the factor scores reported in Tables 4 through 6. Less concern was shown by the subjects for issues that indirectly impact teaching such as salary and benefits.

The item themes produced by the two data collection methods used by Group 2 were similar; however, the configurations of subjects varied across the item themes. An examination of the person factors indicated that the groups of subjects remained relatively the same across the two data collection strategies for Group 2 (n=23), even though the factors associated with the subjects were in a different order.

The results of this study suggest that using the mediated-ranking data collection technique may enable the researcher to account for more variance among the subjects. The factors for the mediated-ranking were more clearly defined with unique characteristics. The results of the mediated-ranking provided better insight into the data, while being less demanding on the subjects. For further investigation, this study could

be expanded to include a comparison of the effectiveness of the unnumbered graphic scale in accounting for variance among the subjects with the other two data collection techniques.

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Table 1
Person Factors for Subjects in Group 1

	FactorI	FactorII	FactorIII	FactorIV
S1	.14212	.73344*	.10559	-.19749
S2	.25676	.26349	.26912	.21284
S3	.73907*	.17983	-.10930	.19260
S4	.62661*	-.00027	.28437	-.30265
S5	.36063	-.31075	.37032	-.10037
S6	-.09191	.13666	.66711*	-.01211
S7	.29756	-.26152	.17412	.71020*
S8	.05707	-.07859	.53053*	-.15761
S9	.71433*	-.00140	.11623	.06747
S10	-.03620	.01981	-.08950	.66318*
S11	.16125	.06418	.05204	-.49842*
S12	.40794	.71184*	.14270	-.11049
S13	.03040	-.69122*	.22566	-.07412
S14	.02980	-.23210	.58204*	-.08682
S15	.09534	.35520	.62660*	.20686
S16	.11359	-.71708*	.04984	.06732
S17	-.50845*	-.23120	.53902*	.17795
S18	.68387*	-.03839	.11508	-.02149
S19	.38862	.27882	-.03154	-.15897
S20	.53059*	.02795	-.18954	.38970
S21	.76969*	.00353	-.09463	-.08271

Note: Structure coefficients greater than |.50| are highlighted (*).

Table 2
Person Factors for Subjects in Group 2
Using Traditional Q-Sort Data

	FactorI	FactorII	FactorIII	FactorIV	FactorV
S1	-.11737	-.72088*	-.11140	.30516	.15044
S2	.66588*	-.10051	.10247	-.05695	-.20095
S3	-.52263*	-.06713	.37731	-.01641	.20269
S4	-.16322	.00823	.14519	.19561	.77532*
S5	.09937	.02151	.24248	.06903	-.48298*
S6	-.36918	.61545*	.02940	-.00717	.01947
S7	.15290	.56209*	-.53683*	.20901	-.16104
S8	-.07248	.68036*	.22004	.08972	.32011
S9	.70613*	-.06205	-.17339	-.03234	.29265
S10	.02571	.09064	.18896	.55774*	.16986
S11	.17492	.57615*	-.09982	.49908*	-.02634
S12	.42843	.36941	.18924	.55361*	-.16986
S13	.31922	.21200	.64151*	.00178	-.17656
S14	-.06511	-.00806	.58228*	.37058	.15410
S15	.69362*	-.14303	.13385	.21043	-.22474
S16	-.29399	.56077*	.27687	-.10481	.23686
S17	-.22075	-.09037	.02900	.80801*	-.14283
S18	-.28310	.42415	.67858*	.21918	-.19763
S19	.44367	-.23321	.03511	.72569*	.02400
S20	-.19826	-.05314	.66017*	.19806	.01741
S21	.42759	.23751	.63256*	-.16079	.11147
S22	.14202	.23197	.39338	-.17879	.62428*
S23	.0457*	.43775	-.13849	.21940	.35431

Note : Structure coefficients greater than |.50| are highlighted (*).

Table 3
Person Factors for Subjects in Group 2
Using Mediated Ranking Data

	FactorI	FactorII	FactorIII	FactorIV	FactorV
S1	-.75080*	.05651	-.14107	.20446	.09433
S2	-.18672	-.22467	.72764*	-.05565	-.03257
S3	.08956	.56933*	-.32283	-.08914	.11377
S4	-.01868	.17409	-.17247	.17863	.79655*
S5	-.01197	.22524	.33660	.01988	-.40215
S6	.64811*	.07577	-.34675	.06134	-.04501
S7	.35527	-.63571*	-.03373	.29001	-.26999
S8	.69852*	.03308	.05015	.12197	.31507
S9	-.04284	-.48580*	.49010*	.09425	.33441
S10	.10434	.15853	.03353	.60053*	.17397
S11	.52493*	-.21057	.06800	.55676*	.01577
S12	.31357	-.04251	.44089	.62939*	-.15381
S13	.39079	.39496	.49814*	.10464	-.12400
S14	.07724	.61005*	.03309	.23574	.22329
S15	-.08770	-.06569	.71467*	.31668	-.14205
S16	.60187*	.15566	-.12090	-.01316	.27364
S17	-.16814	.22670	-.20418	.79903*	-.03915
S18	.50425*	.70854*	.11537	.15043	-.16516
S19	-.24177	-.08081	.36136	.72803*	.08847
S20	.03602	.66604*	.03788	.18490	.04932
S21	.42917	.28962	.62257*	-.03925	.21044
S22	.29631	.21343	.19862	-.06908	.73395*
S23	.30717	-.51084*	.23257	.29995	.38572

Note: Structure coefficients greater than |.50| are highlighted (*).

Table 4

Regression Factor Scores for
Group 1 - Traditional Q-Sort

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV
1	-.46005	-1.35250*	.55430	.45591
2	-1.22764*	.24836	-.15596	-.12838
3	-2.28400*	.70099	-.72805	.13458
4	-1.18939*	-1.03982*	.08839	1.92094*
5	-.84903	.96120	-1.13879*	1.54517*
6	.38021	-.33290	-.08381	1.77315*
7	1.52002*	-1.47644*	.54335	.46859
8	1.00080*	-1.76216*	-.43453	.18906
9	.59499	-.11004	-2.48328*	.94428
10	1.33951*	-1.46262*	.99141	-.88185
11	.75288	-1.69946*	-.56501	.81574
12	.64968	-1.80489*	-.79507	.27760
13	-.13853	.93151	-1.93630*	-1.18080*
14	-.28726	.91159	-.88556	-.15146
15	-.96319	-.29993	1.18006*	.85513
16	-.96078	-.28032	1.15434*	-.52874
17	-.40731	-.06975	.87746	-.10119
18	-.73952	-1.39618*	2.17447*	-.83050
19	-.78572	-.46712	2.15964*	.34613
20	.50254	-.84180	1.26286*	-.47635
21	.94458	-1.27233*	-1.20538*	-.08934
22	.20509	-.64732	-1.75958*	-.25517
23	-.15411	-1.46886*	-.96525	.01895
24	.10496	-.89626	-.91608	.25477
25	-.60478	.05393	-.28586	.38310
26	-.31244	.26697	1.45974*	.84359
27	-.08922	1.28920*	.06008	.38590
28	-1.35926*	-1.25902*	.13025	-.94897
29	1.38262*	1.60267*	.93931	1.27545*
30	.57528	.92100	1.60073*	.49858
31	.54258	1.26256*	.04354	1.85863*
32	-1.44021*	.68434	.57384	-.36875
33	-1.29663*	-.48881	-.50810	.47518
34	.98101	1.15909*	-.54875	.23436
35	1.37080*	1.32690*	1.33748*	-.89371
36	.33877	.64372	-.30367	-.14636
37	.58389	.28561	.50301	-2.40110*
38	.95839	.19928	-.47022	-1.45552*
39	1.81101*	.46787	-.23288	.51217

Table 4 (cont.)

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV
40	1.40611*	.80196	-.07533	-1.06884*
41	1.10131*	.42289	-.40449	.74229
42	.94338	.96488	-.60373	-.89103
43	.81285	.56657	-.52947	-2.18821*
44	-.33740	.25541	.90524	-.23409
45	-1.01455*	.45439	.15580	-1.60482*
46	-1.39076*	1.52479*	-.16856	-.82698
47	.087?5	-.05715	.34476	-1.58956*
48	.72.72	1.85380*	1.02056*	2.05631*
49	-1.10075*	-.04323	-.84805	-.28624
50	-2.02139*	.64285	-1.15993*	-.16358
51	-.2120?	-.88542	.13107	.42597

Note: Factor scores greater than |1.00000| are highlighted (*).

Table 5

Regression Factor Scores for
Group 2 - Traditional Q-Sort

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV	FSCOREV
1	2.55044*	-2.50759*	.70915	.18308	1.91339*
2	-.04120	-.30672	-.54663	.44725	-.56513
3	1.20194*	-.98627	-1.02844*	-.40228	1.13305*
4	1.64367*	-1.13587*	.42030	-2.83341*	.44434
5	.81964	-.47098	-1.76896*	-.91047	-.20780
6	-.39134	1.75373*	1.63894*	-.06285	1.87484*
7	-.12822	.87537	1.28591*	.19483	.51062
8	-.21157	.80349	1.22386*	-.72772	1.37979*
9	-.92058	1.91384*	.74132	-1.50311*	.95184
10	-.69459	1.04648*	1.52016*	.40274	-.03644
11	-.75873	.60709	1.56766*	.80681	-.59862
12	.60879	.51138	1.78215*	.47914	.18537
13	.02000	-.13350	.50483	-.03462	.14958
14	.01494	.19847	.09784	.22384	.53890
15	-1.71523*	-1.08732*	.94209	.01240	-.04110
16	-1.50965*	-1.68876*	.29546	.53188	-.42079
17	-1.57175*	-1.40958*	.43727	-.06756	.46406
18	-1.98216*	-1.48305*	.70134	.69794	1.02690*
19	-1.84359*	-2.10265*	.59729	-.34843	1.18539*
20	1.58628*	.49114	.78419	.55299	-.75494
21	-1.08306*	1.42816*	.95312	-.71564	-.81349
22	1.20633*	.06773	.64263	-1.19368*	-1.37903*
23	.11070	.89390	1.42632*	-.77568	-2.36467*
24	.02509	-.12388	.64443	-.06202	-.75136
25	.88143	-.47490	.98845	-.35324	-2.06825*
26	1.13599*	-.75864	.94469	-.30013	-1.70476*
27	1.26753*	-1.22817*	.40407	.41502	1.41926*
28	-.49470	-.31933	-1.42032*	-.84389	-.31379
29	.14390	1.09059*	-.00532	1.76170*	.63847
30	.58134	-.16166	.26364	1.70791*	.12455
31	.99490	.25974	-.69591	-.16437	.25095
32	-1.30546*	.34326	-2.32062*	1.15268*	-.23551
33	-1.21224*	.08148	-.97531	-.75429	-.88887
34	1.15435*	.25932	-.61628	1.56522*	-1.33928*
35	1.19533*	.23333	.21567	1.68949*	.12968
36	.17090	.13599	-.77990	.58435	-.61209
37	-.02874	-.41252	-.93768	-.67102	1.10865*
38	-.37770	1.44229*	-1.47466*	-1.85185*	.82714
39	.72857	2.01209*	-1.28118*	-1.45196*	1.90007*

Table 5 (cont.)

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV	FSCOREV
40	.16717	-.07066	-1.04133*	1.65914*	-.27833
41	.48152	.91186	-.92869	1.83867*	-.11124
42	.93132	.40715	-.65749	.92535	.55712
43	-.02955	.13757	.26274	-.35682	.05105
44	-.38247	-.60455	-.19521	.68626	1.24841*
45	-.46327	-.39901	-1.10306*	-.75137	-.66991
46	.19185	-.78776	-.59950	-1.26606*	-1.68346*
47	-.34646	.46131	-.62863	.65896	-.35286
48	-.22356	1.37406*	-1.25360*	.62746	.13165
49	-.04223	.23709	-.45185	-1.27243*	-.46644
50	-.64656	-.67536	-.40905	-.37270	-.82495
51	-1.40931	-.64918	-.87589	.24248	-.66199

Note: Factor scores greater than |1.00000| are highlighted (*).

Table 6

Factor Regression Scores for
Group 2 - Mediated Ranking

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV	FSCOREV
1	2.33083*	.00384	-2.10973*	-.39127	-2.20128*
2	.60182	.30214	-.01581	-.55184	.27092
3	1.00649*	1.00649*	-.54095	.40145	-.94613
4	.84014	.51749	-1.89602*	2.58546*	-.89528
5	.72906	1.68028*	.04345	.84878	.67163
6	-1.91863*	-.99843	.33036	-.18681	-1.85494*
7	-1.38060*	-1.01916*	-.18472	-.55272	-.49390
8	-1.36361*	-1.00192*	-.27344	.75963	-1.14416*
9	-1.93982*	-.53939	.42188	1.45579*	-.94253
10	-1.34213*	-1.58333*	.11552	-.80616	-.16560
11	-1.02658*	-1.56802*	.03278	-.51754	.47471
12	-.98195	-1.14638*	-.98565	-.38742	-.22892
13	-.09162	-.45303	-.57494	.10743	-.09599
14	-.24308	-.27043	-.39045	-.08258	-.54433
15	.66585	-1.75400*	1.24211*	.22259	.42390
16	1.47862*	-1.42278*	1.06311*	-.17567	.44262
17	1.13516*	-1.45779*	1.43365*	.32423	-.33339
18	1.36008*	-1.73573*	1.40966*	-.05245	-1.04410*
19	1.78299*	-1.40942*	1.41332*	.60010	-1.30827*
20	-.27527	-.14753	-1.67461*	-.96826	.25048
21	-1.74136*	-.89188	.29235	.77561	.53055
22	-.39551	-.06161	-1.42541	.94374	1.05569*
23	-1.07675*	-1.07241	-1.15246*	.52286	2.08826*
24	.52313	-.72050	-.47327	.31136	.46328
25	.37135	-.71525	-1.54832	.54417	1.78575*
26	.73042	-.61640	-1.73022*	.13138	1.34235*
27	1.28078*	.15115	-1.23407*	-.27643	-1.78400*
28	.25243	1.06442*	.69437	1.08612*	.56140
29	-.77877	-.04772	-.20666	-1.55114*	-.78076
30	.12670	.10719	-.23438	-1.71351*	.05200
31	-.31964	1.04253*	-.26469	-.06299	.10676
32	.07119	1.35045*	2.33462*	-1.02403*	.47638
33	-.02539	.16304	1.30085*	1.06053*	.95769
34	.04139	.89730	-.73017	-1.72220*	1.37427*
35	.10780	.38716	-1.18618*	-1.50527*	-.50591
36	.14508	.49520	-.06505	-.62564	.91123
37	.38106	1.13892*	.60314	.79762	-1.24137*
38	-1.31202*	1.74291*	.84956	1.65626*	-.53158
39	-1.90341*	1.97863*	.07047	1.16667*	-1.63140*

Table 6 (cont.)

	FSCOREI	FSCOREII	FSCOREIII	FSCOREIV	FSCOREV
40	.44839	.89216	.24024	-1.62552*	.32713
41	-.23117	.92606	.03376	-1.93806*	.26348
42	-.08437	1.09747*	-.19689	-1.17015*	-.45359
43	-.02076	-.04414	-.27645	.39745	-.19029
44	.78230	.05898	.74214	-.60514	-1.61715*
45	.48943	.76515	.59418	1.03083*	.82529
46	.90671	.39792	-.60571	1.26804*	1.48818*
47	-.35946	.61054	.94060	-.94950	.88554
48	-1.00522*	1.11857*	1.00511*	-1.24722*	.23080
49	-.38751	.47635	.38500	.94162	.54812
50	.64620	-.28111	.67400	.85707	1.25504*
51	.96823	.10339	1.71001*	-.10726	.87124

Note: Factor scores greater than |1.00000| are highlighted (*).

Figure 1
Unnumbered Graphic Scale

For each statement, place a mark on the line beneath it indicating how strongly you agree or disagree.

EXAMPLE:

Every teacher should have five hours of planning a week.

STRONGLY DISAGREE- -+ STRONGLY AGREE

(In this example, the person strongly agreed with the statement.)

Appendix A
Items Included in the Problems of Teaching Survey*

SALARY/BENEFIT ISSUES

1. General Dissatisfaction with Salary
2. Lack of Remuneration for Extra Duties
3. Inadequacy of Retirement Benefits
4. Inadequacy of Health Insurance Benefits
5. Inadequate Professional/Personal Leave Benefits

STUDENT RELATED CONCERNS

6. Lack of Student Discipline
7. Lack of Student Motivation
8. General Attitude of Students
9. Student Violence
10. Student Apathy

PARENT AND COMMUNITY-RELATED

11. Lack of Parent Support
12. Lack of Parent Involvement
13. Lack of Community Support
14. Lack of Community Involvement

ADMINISTRATION RELATED

15. Lack of Administrative Support
16. Lack of Administrative Understanding
17. Lack of Administrative Concern
18. General Dissatisfaction with Administration
19. Incompetent Administration

LACK OF RESPECT

20. Society's Attitude Toward Teaching
21. Lack of Respect from Students
22. Lack of Respect in the Community
23. Lack of Respect in General
24. Lack of Respect from Parents
25. Low Status/Prestige

Appendix A (cont.)

26. Not Considered a Professional
27. Little Opportunity for Advancement/Promotion

EMOTIONAL ASPECTS

28. Routine/Boredom
29. Stress
30. Frustration
31. Burnout
32. Feelings of Isolation
33. Lack of Fulfillment
34. Lack of time for Family/Personal Life

WORKING CONDITIONS

35. Excessive Paperwork
36. Non-teaching Duties
37. Inadequate/Outdated Facilities
38. Overcrowded Buildings
39. Class Size
40. Long Hours
41. Inadequate Time for Planning
42. Heavy Teaching Load
43. Lack of Supplies/Materials
44. Lack of Input in Decision-Making
45. Lack of Autonomy
46. Lack of Duty-Free Breaks/Lunch
47. Interruptions to Instructional Time

MISCELLANEOUS/INTERPERSONAL

48. Problems Meeting Needs of Special Students
49. Problems with Teacher Evaluation Procedures
50. Frequent Changes in School Policy
51. Dissatisfaction with Colleagues

*Note: Respondents in Groups 1 and 2 indicated their opinion on each of these items via a traditional Q-sort, placing the items in categories ranging from "This issue is not a problem at all for me" to "The issue is a very serious problem for me." Respondents in Group 2 also indicated their opinions on each item through a mediated-ranking by rank-ordering each item within each category.

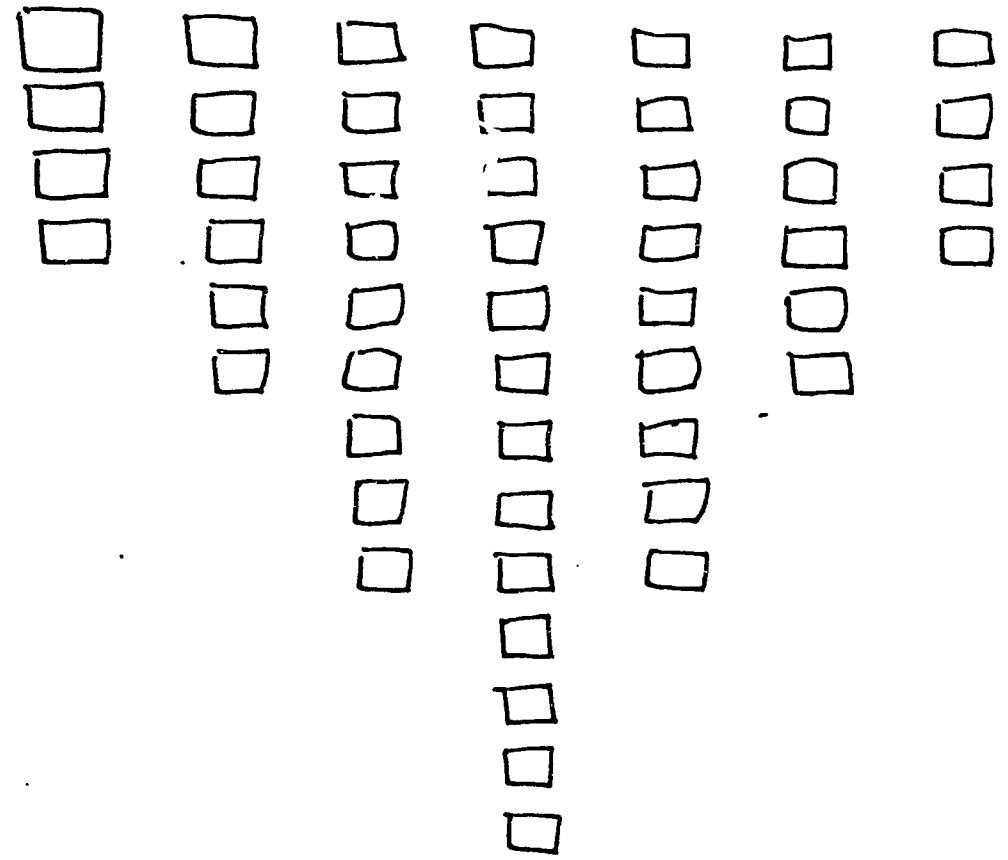
Appendix B

Problems of Teaching Study

Each card lists a problem that a teacher might confront. Sort the 51 cards into seven piles based on the extent to which you agree the items are a problem for you. Use your most recent teaching experience as a reference for your responses.

You must put the number of cards into each pile as specified. (See numbers in parentheses following each category designation.) Then record the item numbers (preceding the problem) in the boxes provided.

NOT AT ALL A PROBLEM (4)	A MINOR PROBLEM (6)	A FAIRLY MINOR PROBLEM (9)	MODERATELY A PROBLEM (13)	A FAIRLY SERIOUS PROBLEM (9)	A SERIOUS PROBLEM (6)	A VERY SERIOUS PROBLEM (4)



Also complete the following:

Gender _____ Ethnicity _____ Years Tch. Exper. _____

State/Country in which you last taught _____

Setting of last teaching experience (circle): elementary middle/jr. high high

Appendix C

Problems of Teaching Study

Each card lists a problem that a teacher might confront. Sort the 51 cards into seven piles based on the extent to which you agree the items are a problem for you. Use your most recent teaching experience as a reference for your responses.

You must put the number of cards into each pile as specified. (See numbers in parentheses following each category designation.) Then record the item numbers (preceding the problem) in the boxes provided.

NOT AT ALL A PROBLEM (4)	A MINOR PROBLEM (6)	A FAIRLY MINOR PROBLEM (9)	MODERATELY A PROBLEM (13)	A FAIRLY SERIOUS PROBLEM (9)	A SERIOUS PROBLEM (6)	A VERY SERIOUS PROBLEM (4)
48	42	33	20	11	5	1
49	43	34	21	12	6	2
50	44	35	22	13	7	3
51	45	36	23	14	8	4
	46	37	24	15	9	
	47	38	25	16	10	
		39	26	17		
		40	27	18		
		41	28	19		
			29			
			30			
			31			
			32			

Also complete the following:

Gender _____ Ethnicity _____ Years Tch. Exper. _____

State/Country in which you last taught _____

Setting of last teaching experience (circle): elementary middle/jr. high high