8-1972

Student Ratings of Secondary-School Science Teachers

Charles E. Townsend
Western Michigan University

STUDENT RATINGS OF SECONDARY-SCHOOL SCIENCE TEACHERS

by

Charles E. Townsend

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Doctor of Philosophy

Western Michigan University
Kalamazoo, Michigan
August 1972

ACKNOWLEDGEMENTS

My appreciation and gratitude goes to the members of my doctoral committee, Dr. George G. Mallinson, Dr. Paul Holkeboer, Dr. Robert Nagler, and Dr. William Van Deventer. Their assistance with the writing of this dissertation was most helpful.

For their guidance, encouragement, and friendship, this writer is especially indebted to Dr. William Coats, Dr. Uldis Smidchens, and Dr. John Knapp II.

For her skill and patience in typing this dissertation, my thanks go to Jeanne Bournazos.

Acknowledgement for their support and encouragement goes to my father, mother, brothers and sister.

To my wife, Nancy, and son, Brian, for their patience and sacrifices, I commit my life's work and devotion.

Charles E. Townsend

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

LIST OF TABLES

LIST OF TABLES (cont'd)

CHAPTER I

STATEMENT OF THE PROBLEM AND REVIEW OF RELATED LITERATURE

Introduction

During the past two decades there has been an increasing concern for accountability in the field of education. The reason for this accelerated concern is clear if one examines the many complex and interrelated sociological phenomena currently operative in the United States. Among these factors are the changing school curriculum; increasing school enrollments; and the growing militancy of administrators, teachers and students. These and other factors, including inflation, have caused a rapid increase in school expenditures. As financial support from the public has increased, the proponents of accountability have become more vocal. Grieder[1] states:

> It is inevitable and desirable that teachers and administrators give a better account of their professional activities and the funds that are devoted to schooling. As salaries continue to rise, the pressure for accountability will increase. In a few years this may well lead to greater interest in better teaching, in really good teaching by dedicated teachers.

If satisfactory responses are to be made to the demands for accountability, there is a need to identify and measure the characteristics of effective teaching. During the past two decades

---

[1]Grieder, Calvin, "Educators Should Welcome Pressure For Accountability." Nation's Schools, LXXV (May 1970), 14.

efforts to appraise the quality of teaching have been undertaken by hundreds of researchers and have produced a considerable body of literature. Some of these studies will be reviewed in the sections that follow.

Studies Related to Teacher Effectiveness

Three investigators have summarized many of the studies that deal with characteristics of effective teachers. In 1948 Barr[1] published a summary of 153 studies concerned with the measurement and prediction of teacher effectiveness. In 1950 Domas and Tiedman[2] reported a bibliography of 1006 publications dealing with the effectiveness of teachers. In 1954 Morsh and Wilder[3] reviewed 360 quantitative studies that dealt with the identification of effective instructors.

The above studies indicated that teacher effectiveness is multidimensional and, therefore, should be defined in accord with supportable judgments. In the studies reviewed, the criteria used for judging teacher effectiveness differed depending on their relevance to the research problems. However, the main criteria used

---

[1]Barr, A. S., "The Measurement and Prediction of Teaching Efficiency: A Summary of Investigations." Journal of Experimental Education, XVI (June 1948), 203-83.

[2]Domas, Simeon J., and Tiedman, David V., "Teacher Competence: An Annotated Bibliography." Journal of Experimental Education, XIX (December 1950), 101-218.

[3]Morsh, J. E., and Wilder, E. W., "Identifying the Effective Instructor: A Review of the Quantitative Studies, 1900-1952." Research Bulletin AFPTRC-TR-54-44, October 1954. Pp. 124.

in these studies included (1) administrative ratings, (2) peer ratings, (3) student ratings, (4) self-ratings, (5) systematic observations, and (6) student gain scores. The degree to which teachers were considered to be effective according to a certain criterion varied with teacher intelligence, education, age, teaching experience, attitude and interest. Other teacher variables that were less predictive of teacher effectiveness included (1) professional activities and interests, (2) extra-curricular activities, (3) culture, (4) socio-economic status, (5) sex, (6) marital status, and (7) teacher aptitude.

The study, Characteristics of Teachers by Ryan[1] is one of the more extensive studies of teachers. Three major areas were investigated in this study, namely, (1) the identification and analysis of patterns of classroom behavior, attitudes, viewpoints, and intellectual and emotional qualities that characterize teachers; (2) the development of a paper-and-pencil instrument suitable for assessing patterns of classroom behavior and personal qualities of teachers; and (3) comparisons of various groups of teachers with respect to points (1) and (2). During the study, which occupied more than six years, 100 separate research projects were undertaken involving more than 6000 teachers in 1700 schools and about 450 school systems. In the study, trained investigators observed student-teacher behavior in classrooms in an effort to discover patterns of teacher behavior and concurrent student behavior. The participating teachers were

---

[1]Ryan, D. G., Characteristics of Teachers, Washington, D. C., American Council on Education, 1960. Pp. v + 400.

surveyed concerning their activities, preferences, and attitudes. Among the many findings, those directly pertinent to this study are listed below:

1. Three distinct patterns of teacher behavior that were measured by the Teacher Characteristic Schedule were (a) warm versus aloof teacher behavior, (b) responsible versus slipshod teacher behavior, and (c) stimulating versus dull teacher behavior. These and lesser factors not mentioned were related in different degrees with student behavior, level of instruction, and scores on other standardized personality inventories such as the Minnesota Multiphasic Personality Inventory and the Thurstone Temperament Schedule.[1]

2. Certain dimensions of teacher attitudes, verbal understanding, and educational viewpoints differed significantly for teachers who were stratified in the study according to age, experience, sex, marital status and college achievement.[2]

3. When comparing scores on the Teacher Characteristic Schedules, teachers with high (positive) scores differed in behavior from those with low (negative) scores as follows:

(a) Teachers with high scores tended to:

(1) be extremely generous in appraisal of the behavior and motives of other persons.

(2) possess strong interests in reading and literary affairs.

---

[1] loc. cit., pp. 139-46.

[2] loc. cit., pp. 289-342.

(3) be interested in music, painting and arts in general.

(4) participate in social groups.

(5) enjoy student relationships.

(6) prefer non-directed, or permissive, classroom procedures.

(7) manifest superior verbal intelligence and evidence superior emotional adjustment.

(b) Teachers with low scores tended to:

(1) be restrictive and critical in their appraisals of other persons.

(2) prefer activities that did not involve close personal contacts.

(3) express less favorable opinions of students.

(4) manifest less high verbal intelligence.

(5) show less satisfactory emotional adjustment.

(6) represent older age groups.[1]

In a more recent study, Wilson[2] compared certain teacher, classroom, and community characteristics with the ratings given teachers by their students. The selected characteristics included (1) teacher variables of sex, age, experience, college degree, college major, marital status, and attitude toward the class; (2) classroom variables of subject matter, grade level and class size; and

---

[1] loc. cit., pp. 397-98.

[2] Wilson, Dale T., "A Study of Factors Related to Student Ratings of Teachers." Unpublished doctoral dissertation, Western Michigan University, Kalamazoo, Michigan, April 1971. Pp. ii + 124.

(3) community variables of size and general socio-economic level. The subjects consisted of 1180 teachers, and 51,966 secondary-school students in 2101 classes serviced during 1968-1970 by the Educator Feedback Center at Western Michigan University. Among the findings, those pertinent to this study are listed below:

1. A positive relationship was found to exist between teachers' perceptions of their classes and students' ratings of teacher performance.
2. Teachers from suburban communities were rated more favorably by their students than teachers from rural and large urban communities. The analysis of socio-economic status of the community as related to student ratings revealed similar results in that teachers who judged their community to be middle class were rated more favorably than teachers who judged their communities to be of low socio-economic status.
3. Students in classes with thirty-six or more members rated their teachers less favorably than students in smaller size classes.
4. Married teachers were rated more favorably by their students than single teachers.
5. Teachers with Master's degrees were rated more favorably by their students than those teachers with Bachelor's degrees.
6. Teachers with graduate majors in sciences and mathematics were rated more favorably by their students than teachers with graduate majors in the fine arts, counseling, and guidance.
7. Teachers with ten to fourteen years of experience were

rated more favorably than teachers who had less than ten or more than fourteen years of teaching experience.

8. Teachers in the thirty-six to forty-five year age bracket were rated more favorably than teachers who were younger or older.

9. The variables of grade level taught, sex of teacher, undergraduate major of teacher, and subject in which students were enrolled were found to be unrelated to student ratings.

It should be noted that these studies which have attempted to measure teacher effectiveness generally evaluated teachers without classifying them according to the subjects they taught. In particular, little research has been done which deals with the behavioral characteristics of science teachers. This situation is anomalous when one considers the amount of Federal support science teaching has received since the establishment of the National Science Foundation in 1950. Accountability and assessment of teacher effectiveness have apparently not paralleled the growth of such support.

Federal Support for Science Programs

Since the establishment of the National Science Foundation the Congress of the United States has assumed increased responsibility for improving science education through increased funding. In supporting activities of the National Science Foundation, those related to the National Defense Education Act, and Elementary and Secondary Education Act, Congress appropriated large sums of money for fellowships, institutes, special projects, course content

improvement, training of specialized scientific personnel, and educational studies. All these programs, at least in part, were designed to improve the training of science teachers and the structure of science programs.

Among the more widely publicized programs have been the comprehensive programs for improving content, instructional materials, and methods of teaching in science courses at all levels of instruction. Among the programs developed for the elementary school are Science-A Process Approach, the Elementary Science Study (ESS), and the Science Curriculum Improvement Study (SCIS). Programs developed for the secondary level include Biological Sciences Curriculum Study (BSCS), the Physical Science Study Committee (PSSC), Chemical Education Material Study (CHEMS), Chemical Bond Approach Project (CBA), and the Earth Science Curriculum Project (ESCP). At the college level some of the programs are the Nuclear Science Curriculum Project (NSCP) and the Physical Science for Nonscience Students (PSNS).

Thousands of man-hours and millions of dollars have gone into the development and implementation of these projects. The subject-matter content, teaching materials and teaching techniques developed as a result of the projects differ from many of the older approaches to science instruction. Consequently, the education and re-education of science teachers was, and still is, necessary.

For more than a decade several Federal agencies have supported the training of science teachers in Summer Institutes, In-Service Institutes, and Academic-Year Institutes. These programs have

absorbed a substantial portion of the costs of additional teacher education by underwriting tuition, providing teaching materials and supplies, and subsidizing travel and other expenses. From the inception of the Institutes, thousands of teachers have participated with Federal support. However, studies that provide specific information about the effectiveness of these programs in improving science instruction in the classroom are sparse.

Studies Related to Science Teacher Effectiveness

In view of large monetary investments by the Federal Government for science education, and the changes sought through science-curriculum reform, there is a need to understand better and assess more precisely the components of effective science teaching. During the post-Sputnik concern for the identification and nurture of more scientists, Knapp and Goodrich[1] and Brandwein[2] suggested that often a single teacher turns a student toward science as a career. If so, this emphasizes the need to study the affective influence of science teachers.

The descriptions of teacher behavior obtained from students have been a promising approach for evaluating this influence. The use of such a procedure seems valid because it is the student who is the target of the learning activities and consequently his image

---

[1]Knapp, R. H., and Goodrich, H. B., Origin of American Scientists. Chicago: University of Chicago Press, 1952, pp. 249-58.

[2]Brandwein, P. F., The Gifted Student as Future Scientist. New York: Harcourt, Brace and Company, 1955, p. 33.

of the teacher may reasonably be assumed to be an important factor in student success. An analysis of the few studies that use student descriptions of teacher behavior indicated that only a fraction have dealt specifically with science teachers.

Cogan[1] attempted to describe teacher behavior in three categories: (1) "inclusive behavior" in which the teacher tends to draw the students into the classroom process, (2) "preclusive behavior" in which the teacher tends to make the students see in his behavior the cues for avoidance, and (3) "conjunctive behavior" that stems from the teacher's ability to communicate. The study involved 33 teachers, including four science teachers, and 987 students in the eighth grades of five junior-high schools in two differing communities. Using the statistical techniques of analysis of variance and correlation, the relationship between each student's description of his required and his self-initiated activities for the course was investigated. Cogan's findings indicate that the students do more required and self-initiated work in science classes in which they believe the teacher is well organized. Similarly, as the students evaluated a science teacher as "warm or friendly," they seemed to respond with a greater effort.

In a companion paper Cogan[2] examined the relationships between different teachers, schools, communities, and school subjects and

---

[1]Cogan, M. L., "The Behavior of Teachers and the Productive Behavior of Their Pupils: I. Perception Analysis." Journal of Experimental Education, XXVII (December 1958), 89-105.

[2]Cogan, M. L., "The Behavior of Teachers and the Productive Behavior of Their Pupils: II. Trait Analysis." Journal of Experimental Education, XXVII (December 1958), 107-24.

student ratings of teacher characteristics. Using an analysis of variance and correlation design, he found there were significant differences between student ratings when the students were classified by type of teacher and type of school.

Cogan's studies influenced Reed[1] to examine a number of additional questions concerning students' interest in science and the three teacher characteristics of warmth, demand, and creation of intrinsic motivation as seen by the students. In his study he asked 584 boys and 461 girls in 38 ninth grade general science classes taught by 38 teachers in 19 public schools to evaluate teachers on the above characteristics. Reed's findings were these:

(1) Students' perceptions of their fathers' interest in science is positively related to the students' overt scientific activities.

(2) The students' perceptions of the teacher variable of warmth is significant and related positively to students' interest in science.

The studies by Cogan and Reed have shown that student descriptions of what the science teacher does are closely related to what students do. Therefore, the use of student ratings of science teachers is an important consideration in assessing the effectiveness of science teachers.

---

[1]Reed, H. B., Jr., "Teacher Variables of Warmth, Demand and Utilization of Intrinsic Motivation Related to Pupils' Science Interest: A Study Illustrating Several Potentials of Variance-Covariance." Journal of Experimental Education, XXIX (March 1961), 205-29.

In the studies of science teachers cited above, with the exception of Cogan's companion study, student ratings were used to define behavior patterns of teachers and consequent effects on student performance. No attempt was made to measure the relationships between certain teacher characteristics such as type of subject taught, educational background of the teacher, experience in teaching, age, or marital status upon student ratings. Cogan's study did consider the relationships between certain teacher, school, and community characteristics and student ratings of teachers but was limited in that it only measured the ratings of students in four classes of seventh grade science.

Wilson's study, cited earlier, made an initial attempt to compare the student ratings of teachers of various class subjects. However, he failed to classify science teachers as precisely as might be desired. Wilson failed to detect significant differences between the ratings of the various groups of teachers.

Finally, a search of the literature failed to reveal any attempt to compare student ratings of science teachers over an extended period of time in spite of recent changes in science teaching philosophy, with concurrent curriculum reform.

Purpose

In an attempt to extend the usefulness of student ratings for providing guidelines for the accountability of science teachers, the investigator designed a research study which attempted to find answers to the following questions:

1. What relationships exist between student ratings of science teachers in 1961-63 and those of science teachers in 1968-70?
2. What relationships exist between student ratings of science teachers and those of non-science teachers?
3. What relationships exist among student ratings of general science, biology, chemistry, and physics teachers?
4. What relationships exist among student ratings of science teachers and certain science teacher characteristics, including sex, marital status, age, college degree, experience, number of years in the school system, and the teacher's perception of his class?
5. What relationships exist among student ratings of science teachers and certain community characteristics, namely, type of community and socio-economic status of the community?
6. What relationships exist among student ratings of science teachers and certain classroom characteristics, namely, class size and student sex ratio?

CHAPTER II

DESIGN AND METHODOLOGY

Procedures

The data analyzed in this study were obtained originally from teachers requesting the services of the Student Reaction Center and Educator Feedback Center at Western Michigan University during the 1961-63 and 1968-70 time periods. Those teachers requesting the Centers' services were mailed questionnaires so that each student in those classes selected by the teacher might evaluate his teacher's effectiveness. Instructions were included for the administration of the questionnaires.[1] The instructions suggested that someone other than the requesting teacher be in charge of the administration of the instruments. This person might be a fellow teacher, counselor, or a student selected by the teacher. The completed questionnaires were returned to the Centers in a self-addressed envelope along with other completed forms (Teacher ID Form[2] and Class ID Form[3]).

As the completed forms were received they were analyzed and a teacher image profile[4] was constructed in duplicate. One profile

---

[1] See Appendix A.

[2] See Appendix B.

[3] See Appendix C.

[4] See Appendix D.

was returned to the teacher together with instructions for interpretation.[1] The duplicate profile and all teacher-supplied data remained in the Centers for a year, at which time they were stored in the Archives at Western Michigan University.

All files from 1961 through 1970 were made available to this investigator and an initial count was made to check the number of forms used to rate science teachers. A representative number of science teacher forms was available for a comparative study. The science teacher forms used in this study were from 1961-63 and 1968-70. These time periods were chosen since they seemed to maximize the difference in emphasis of content and methodology within the sciences during the decade of the 1960's. The non-science teacher forms were from the 1968-70 time period for comparisons between student ratings of science and non-science teachers.

The Sample

The subjects included in this study consisted of general science, chemistry, physics, and biology teachers from the North Central States who had voluntarily requested the services of the Student Reaction Center and Educator Feedback Center at Western Michigan University during the years 1961-63 and 1968-70. As indicated above, all non-science teachers who requested the service of the Educator Feedback Center during the years 1968-70 were included for comparative purposes.

---

[1] See Appendix E.

The science courses for the years 1961-63 involved a total of 142 science teachers rated by 8633 students in 392 classes. These data appear in Table 2-1.

Table 2-1

Numbers of Science Teachers, Classes, and Students for the Years 1961-63

1961-63	General Science	Biology	Chemistry	Physics
Numbers of Teachers	25	18	86	13
Numbers of Classes	61	35	282	14
Numbers of Students	1618	813	5974	228

The types of science courses for the years 1968-70 in Table 2-2 were stratified on the basis of the numbers of teachers, classes and students. A total of 249 science teachers was rated by 9105 students in 379 classes. These data appear in Table 2-2.

Table 2-2

Numbers of Science Teachers, Classes, and Students for the Years 1968-70

1968-70	General Science	Biology	Chemistry	Physics
Numbers of Teachers	55	81	61	52
Numbers of Classes	87	138	95	59
Numbers of Students	2375	3464	2144	1122

For the years 1968-70 the non-science subjects involved 934 teachers from all major academic areas common to the secondary school. The teachers were rated by 41,329 students from 1680 classes.

The number of teachers, classes, and students was stratified on selected science teacher characteristics. The data reveal that those science teachers serviced by the Educator Feedback Center during 1968-70 were predominantly male (89%), married (88%), and ranged between 20 to 35 years of age (66%). A majority of the science teachers perceived their community to be suburban (62%), and average to middle class socio-economically (94%). Of those science teachers for whom data were available, forty-six percent had a Bachelor's degree, while fifty-four percent had earned a Master's degree. Fifty-three percent were teaching in their undergraduate major field whereas only forty percent were teaching in their major graduate area. The lower percentage of teachers teaching in their graduate major area is explained in that most of the graduate work was in professional education. A further analysis of these data indicates each teacher was rated by an average of 1.6 classes with an average of 26 students in a class. These data appear in Table 2-3.

Apparent discrepancies in the number of teachers, classes, and students among the selected science teacher characteristics result from the incomplete or non-returned Class ID Form and/or Teacher ID Form distributed as a portion of the Educator Feedback's evaluation package. These discrepancies are reflected in the variation in N's reported in the analyses that follow.

Table 2-3

Numbers of Science Teachers, Classes, and Students on Selected Sample Characteristics for 1968-70

Teacher Characteristics	Science Teachers 1968-70		
	Teachers	Classes	Students
Sex			
Male	206	334	8001
Female	26	43	1045
Marital Status			
Married	108	168	3755
Single	15	25	607
Number Years Teaching			
1-2	49	80	2007
3-4	31	66	1498
5-6	75	119	3068
7+	68	107	2375
Top Degree			
Bachelor's	57	90	2092
Master's	69	105	2313
Age Brackets			
20-25	21	32	803
26-35	61	97	2144
36-45	30	48	1088
46+	12	18	370
Years in School System			
1-2	45	70	1650
3-5	34	55	1197
6-8	17	26	552
9+	30	44	1006
Type Community			
Urban	30	47	1026
Suburban	62	98	2247
Rural	32	50	1132
Socio-Economic Status of Community			
Low	8	14	312
Average	64	98	2150
Middle Class	52	83	1943

Those classes providing student reactions were mainly from public schools (99%), and were composed racially of 91% Caucasian and 9% minority races. Fifty-four percent of the students were females and 46% males.

Variables and Instrumentation

For the purpose of this study it was arbitrarily decided that student ratings of the following teacher characteristics may be related to teacher effectiveness:

1. Knowledge of subject
2. Clarity of presentation
3. Fairness
4. Control
5. Attitude toward students
6. Success in stimulating interest
7. Enthusiasm
8. Attitude toward student ideas
9. Encouragement of student participation
10. Sense of humor
11. Assignments
12. Appearance
13. Openness
14. Self-control
15. Consideration of others
16. Effectiveness

Ratings of the above characteristics were obtained using six different versions of the questionnaire developed by the Student Reaction Center. The original instrument, the Student-Opinion Questionnaire[1] (SOQ), was developed by Bryan in the early 1950's. In the twenty years since its conception, the instrument has undergone several modifications. The major modification consisted of changes in the type and number of characteristics for which items were included. In its present form the instrument has been renamed the Teacher-Image Questionnaire[2] (TIQ) and consists of 16 items. The various forms of the instruments together with the numbers and type of items that were present on each of the forms used by the service centers at Western Michigan University during the time period encompassed in this study appear in Table 2-4. Only those items found in all forms of the SOQ and TIQ were used to compare ratings of science teachers in 1961-63 with those of science teachers in 1968-70. These common items were (1) knowledge of subject matter, (2) clarity of presentation, (3) fairness, (4) control, (5) attitude toward students, and (6) success in stimulating interest. For comparisons between science and non-science teachers and for comparisons among stratifications by individual teacher, classroom, and community variables, only those items common to the TIQ and Form E and Form D of the SOQ, cited above, were analyzed.

---

[1] See Appendix F.

[2] See Appendix G.

Table 2-4

Student Rating Instruments, 1961-70

Teacher Characteristics	Student-Opinion Questionnaire (SOQ) Form A	Form B	Form C	Form D	Form E	Teacher-Image Questionnaire (TIQ) Form A
1. Knowledge of subject matter	x	x	x	x	x	x
2. Clarity of presentation	x	x	x	x	x	x
3. Fairness	x	x	x	x	x	x
4. Control	x	x	x	x	x	x
5. Attitude toward students	x	x	x	x	x	x
6. Success in stimulating interest	x	x	x	x	x	x
7. Enthusiasm				x	x	x
8. Attitude toward student ideas				x	x	x
9. Encouragement of student participation				x	x	x
10. Sense of humor				x	x	x
11. Assignments				x		x
12. Appearance						x
13. Openness						x
14. Self-control						x
15. Consideration of others						x
16. Effectiveness	x	x	x			x
17. Variety in teaching procedure				x	x	
18. Planning and preparation				x	x	
19. Amount of learning		x	x			
20. Businesslike	x	x	x			
21. Think	x	x	x			
22. Value			x			

The reliability of the instruments has been checked periodically and the results have directed the nature of the revisions. The reliability coefficients for Form E and the SOQ as determined by Bryan[1] in 1967 appear in Table 2-5.

Table 2-5

Reliability of Items on Bryan's Student-Opinion Questionnaire Form E

(1)	.87	(2)	.82	(3)	.84	(4)	.95	(5)	.88	(6)	.87
(7)	.90	(8)	.86	(9)	.91	(10)	.77	(11)	.91	(12)	.90

The reliability of the twelve items in this table was determined by randomly selecting fifty classes and correlating the average student responses by means of the chance-halves technique. The Spearman-Brown formula was used for computing test reliability.

Coats[2] factor analyzed the SOQ Form E and reported that one basic factor accounted for sixty-one percent of the variance in student reactions to the teachers. He labeled this factor "charisma" or "popularity." Two lesser factors accounted for approximately sixteen percent of the variance and were labeled "human-centeredness"

---

[1] Bryan, Roy C., "Some Observations Concerning Written Reactions to High School Teachers." 1967-68 Annual Report of the Student Reaction Center, Western Michigan University, Kalamazoo, Michigan, 1968, p. 11.

[2] Coats, William C., "Student Perceptions of Teachers - A Factor Analytic Study." An unpublished manuscript, presented at the Annual Meeting of the American Educational Research Association, Minneapolis, Minnesota, March 2-6, 1970, p. 9.

and "structure-centeredness." These three factors accounted for approximately eighty percent of the total variance in the questionnaire and for a minimum of sixty-seven percent and a maximum of eighty-seven percent of the variance in any single item. Since it appears that one basic factor accounted for most of the variance in student ratings of teachers, and is common to all items, an average of all mean class responses was considered to be the major dependent variable within this study.

The independent variables used in this study to stratify the sample for the purposes of comparison were obtained from the results of administering the Class ID Form and Teacher ID Form that are a portion of the evaluative package sent to teachers who so requested, by the Educator Feedback Center. The items on the Class ID Form that served as independent variables are as follows:

1. Date. Student responses were grouped as follows:

   1961-1963

   1968-1970

2. Subject Area. The classes were grouped as follows:

   Science

   Non-science

3. Grade Level. Grades seven through twelve were included in this study.

4. Teacher Perception of Class. Teachers rated their classes on the basis of ability, behavior, industry, and attitude. The rating scale ranged from poor to excellent. The five gradations along the scale were assigned numerical values

from one to five. An average of the four ratings served as the overall estimate of the teacher's perception of the class.

The items on the Teacher ID Form that served as independent variables are the following:

1. Sex. Teachers were grouped as to male and female.
2. Number of Years in Teaching. Teachers were grouped according to the number of years they had taught. They were as follows:

1-2 Years	5-6 Years
3-4 Years	7+ Years

3. Highest Degree Held. Teachers were grouped on the basis of having earned only a Bachelor's degree and those having earned a Master's degree.
4. Number of Year in School System. Teachers were categorized as follows:

1-2 Years	6-8 Years
3-5 Years	9+ Years

5. Marital Status. Teachers were grouped as married, single or other. Only the categories of married and single were used in this study.
6. Age. Teachers were grouped as follows:

20-25 Years	36-45 Years
26-35 Years	46+ Years

7. Socio-Economic Status of Community. Teachers indicated that their community was low, medium or middle in socio-economic status.

8. Type Community. Teachers indicated that their community was urban, suburban or rural.

9. Class Sex Ratio. Classes were grouped into the following:

   Predominantly male (>66% male)

   Mixed (≥33% but ≤66% male)

   Predominantly female (<33% male)

10. Class Size. Classes were grouped into the following:

    Small (<20 students)

    Medium (20-26 students)

    Large (>26 students)

Data Analysis

A variety of statistical treatments were used in this study to determine the extent of the relationships between the independent and dependent variables. Since this study attempts to provide answers to a number of questions it was necessary to vary the types of analyses according to the variables compared. The types of treatment included t-tests, one and two-way analyses of variance, and product-moment correlations. The exact probabilities of observing reported differences by chance alone are reported as "p" levels. The analysis and interpretation appear in the following chapter.

The data were analyzed by appropriate computer programs using the DEC System 10 computer at Western Michigan University.

A data card format was developed to incorporate all available information from the files. The file information was transcribed to

IBM code sheets according to the specifications of the card format. The information on the code sheets was subsequently converted to punched cards. The information punched on the cards was validated by comparing the printout of the cards with the IBM code sheets. Cards in error were repunched. The remaining errors were accounted for by writing computer programs to exclude any information outside the possible range for any variable.

CHAPTER III

ANALYSIS OF DATA

Introduction

The purpose of this chapter is to describe the data that were collected, and the statistical treatment.

The main statistical treatment of the data involved the one-way analysis of variance. Where appropriate, coefficients of correlation and t-tests were used. The exact probability levels (p) of these values and the strengths of association (E^2) or the strengths of determination (r^2) are reported together with each F or "r" value. The strengths of association are the ratios of the sums of squares between groups to the total sums of squares. The strengths of determination are the squares of the coefficients of correlation.

For purposes of this study the relationship between two variables was considered to be significant if the probability level was $\leq .05$ and the strength of association or the strength of determination was $\geq .015$. For t-test comparisons the differences were considered significant if $p \leq .05$.

The dependent variables used in the following analyses are the student ratings of teacher characteristics. The rating scale used by students to evaluate teacher characteristics consisted of five possible responses, "Poor," "Fair," "Average," "Good," and "Excellent." The numerical values assigned to the categories were as follows:

Poor = 1

Fair = 2

Average = 3

Good = 4

Excellent = 5

It is assumed that the higher the numerical value of student ratings, the more favorably students perceived their teachers.

Analyses Related to Main Questions

The main questions to which answers were sought in this study and the data and results are as follows:

1. What relationships exist between student ratings of science teachers in 1961-63 and those of science teachers in 1968-70?

The six ratings of teacher characteristics were those recorded on the rating instruments for 1961-63 and 1968-70. These characteristics were (1) knowledge of subject matter, (2) clarity of presentation, (3) fairness, (4) control, (5) attitude toward students, and (6) interest. These data are summarized in Table 3-1.

Significant differences according to the criteria listed earlier were not detected between the average of the means of the ratings of the six teacher characteristics for the two time periods. However, when the individual means of the six teacher characteristics were compared only the characteristic of "interest" was found to differ significantly. The mean student rating on the teacher characteristic of interest for the second time period was detected to be lower than that for the first time period.

Table 3-1

Analyses of Variance for the Relationships Among Student Ratings of Science Teachers and Selected Time Periods

Teacher Characteristics	Science Teachers						F	p	E^2
	1961-1963			1968-1970					
	Mean	SD	n	Mean	SD	n			
Knowledge of subject matter	4.10	.47	392	4.12	.51	379	1.67	.20	.002
Clarity of presentation	3.34	.80	392	3.40	.59	379	1.48	.23	.002
Fairness	3.75	.64	392	3.64	.63	379	5.75	.02	.007
Control	3.63	.75	392	3.62	.75	379	0.07	.79	.000
Attitude toward students	3.66	.61	392	3.66	.59	379	0.00	.95	.000
Interest	3.72	.77	392	3.24	.65	379	88.12	.00	.103
Average of above 6 items	3.70	.56	392	3.62	.51	379	4.38	.04	.006

2. What relationships exist between student ratings of science teachers and those of non-science teachers?

In all subsequent analyses only teachers from the 1968-70 time period are included. This procedure was adopted for these reasons:

1. The rating instruments of 1968-70 deal with teacher characteristics in addition to those appearing on the earlier forms.

2. Descriptive information dealing with teachers and classes in addition to those measured in the first time period was collected in the latter time period.

In the analyses that follow, science teachers include those who teach general science, biology, chemistry and physics. Non-science teachers are those in the other disciplines.

The sixteen ratings of teacher characteristics are those that appear in Form E of the Student-Opinion Questionnaire and Form A of the Teacher-Image Questionnaire. These data appear in Table 3-2.

A significant difference was not detected between the two averages of the means of the sixteen teacher characteristics for science and non-science teachers. When the means of each pair of the sixteen characteristics were compared individually, only the teacher characteristics of fairness, attitude toward student ideas, sense of humor, and self-control differed significantly. In all four of the characteristics the science teachers were rated significantly higher than the non-science teachers.

Table 3-2

Analyses of Variance for the Relationships
Among Student Ratings of Teachers of
Non-Science and Science Classes

Teacher Characteristics	Type of Teacher (1968-70)						F	p	E^2
	Non-Science			Science					
	Mean	SD	n	Mean	SD	n			
Knowledge of subject matter	4.00	.54	1680	4.14	.51	379	22.83	.00	.010
Clarity of presentation	3.50	.62	1680	3.40	.59	379	7.69	.01	.004
Fairness	3.41	.68	1680	3.64	.63	379	36.78	.00	.017
Control	3.40	.80	1680	3.62	.63	379	22.74	.00	.010
Attitude toward students	3.50	.64	1680	3.66	.59	379	19.25	.00	.010
Success in stimulating interest	3.13	.71	1680	3.24	.65	379	7.04	.01	.004
Enthusiasm	3.92	.55	1680	4.05	.54	379	18.28	.00	.008
Attitude toward student ideas	3.65	.62	1680	3.85	.54	379	32.90	.00	.017
Encouragement of student participation	3.70	.52	1680	3.77	.47	379	5.32	.02	.003
Sense of humor	3.78	.70	1680	4.01	.42	379	33.63	.00	.017
Assignments	3.58	.59	652	3.68	.47	161	4.09	.04	.005
Appearance	4.09	.56	652	4.12	.47	161	0.06	.81	.000
Openness	3.67	.59	652	3.81	.48	161	8.32	.00	.010
Self-control	3.68	.67	652	3.95	.61	161	21.33	.00	.026
Consideration of others	3.77	.62	652	3.93	.53	161	9.64	.00	.012
Effectiveness	3.88	.60	652	3.98	.54	161	4.20	.04	.005
Average of above 16 characteristics	3.59	.53	1680	3.73	.47	379	21.69	.00	.010

3. What relationships exist among student ratings of general science, biology, chemistry, and physics teachers?

In all subsequent analyses student ratings of science teachers will be the average of the means of all sixteen teacher characteristics of Form E of the Student-Opinion Questionnaire and Form A of the Teacher-Image Questionnaire.

The analysis for the comparison of ratings among the different sciences appears in Table 3-3.

Table 3-3

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers of Different Science Classes

Science Course	n*	m	SD	Nr**
General Science	87	3.72	.51	2375
Chemistry	95	3.79	.46	2144
Physics	59	3.82	.46	1122
Biology	38	3.67	.45	3464

Source	SS	df	ms	F	p	E^2
Between groups	1.29	3	.43	1.92	.13	.015
Within groups	83.58	375	.22			
Totals	84.87	378				

*number of teachers
**number of students

Significant differences were not detected among the means of student ratings of general science, biology, chemistry and physics teachers. Consequently, in the following analyses science teachers will be treated as a single group.

4. What relationships exist among student ratings of science teachers and certain science teacher characteristics, namely, sex, marital status, age, college degree, experience, number of years in the school system, and the teacher's perception of his class?

The analysis for comparing the ratings between male and female science teachers appears in Table 3-4.

Table 3-4

Analysis of Variance for the Relationships Between Student Ratings of Male and Female Science Teachers

Sex	n	m	SD	Nr	
Males	334	3.75	.48	8001	
Females	43	3.61	.45	1045	
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	.77	1	.77	3.43	.07	.010
Within groups	84.09	375	.22			
Totals	84.86	376				

Significant differences were not found among the means of student ratings of male and female science teachers.

The analysis for comparing the ratings of married science teachers with those of single science teachers appears in Table 3-5.

Table 3-5

Analysis of Variance for the Relationships Between Student Ratings of Married and Single Science Teachers

Marital Status	n	m	SD	Nr	
Married	168	3.88	.45	3755	
Single	25	3.69	.54	607	
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	.81	1	.81	3.74	.06	.019
Within groups	41.38	191	.22			
Totals	42.19	192				

Significant differences were not found between the means of student ratings of married and single science teachers.

The analyses for comparing ratings of the different age categories of science teachers appear in Tables 3-6 and 3-7.

Table 3-6

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Age Categories

Age Categories	n	m	SD	Nr	
20-25	32	3.62	.45	803	
26-35	97	3.92	.45	2144	
36-45	48	3.93	.36	1088	
46+	18	3.69	.60	370	
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	2.85	3	.95	4.61	.00	.068
Within groups	39.36	191	.21			
Totals	42.21	194				

Table 3-7

t-tests for the Relationships Among Age Categories and Student Ratings of Science Teachers

Age Category	20-25	26-35	36-45
26-35	$t = 3.20$ $df = 127$ $p = .00$		
36-45	$t = 3.26$ $df = 78$ $p = .00$	$t = 0.05$ $df = 143$ $p = .96$	
46+	$t = 0.46$ $df = 48$ $p = .65$	$t = 1.84$ $df = 113$ $p = .07$	$t = 1.87$ $df = 64$ $p = .07$

Significant differences were detected among the means of the student ratings of science teachers in the different age categories. When the means of these age categories were compared, significant differences were not detected between science teachers 26 to 45 years of age and those 36 to 45 years of age. The mean ratings of teachers in the above two categories were significantly higher than those of teachers in the younger, or in the older, categories.

The analysis for comparing the ratings of science teachers with a Bachelor's degree with those who have earned a Master's degree appears in Table 3-8.

Table 3-8

Analysis of Variance for the Relationships Between Student Ratings of Science Teachers and Highest Degree Earned

Highest Degree	n	m	SD	Nr		
Bachelor's	90	3.78	.44	2092		
Master's	105	3.92	.48	2313		
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	.89	1	.89	4.14	.04	.019
Within groups	41.32	193	.21			
Totals	42.21	194				

Significant differences were detected between the means of student ratings of science teachers with only a Bachelor's degree and those for science teachers with a Master's degree.

The analyses for the comparison of ratings among the different categories of experience of science teachers appear in Tables 3-9 and 3-10.

Table 3-9

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Teacher Experience

Number of Years Teaching	n	m	SD	Nr	
1-2	80	3.50	.45	2007	
3-4	66	3.83	.43	1498	
5-6	119	3.71	.45	3068	
7+	107	3.88	.47	2375	
Source	SS	df	ms	F	p	E^2
Between groups	7.25	3	2.42	11.63	.00	.084
Within groups	76.52	368	.20			
Totals	83.77	371				

Table 3-10

t-tests for the Relationships Between Experience Categories and Student Ratings of Science Teachers

Number of Years Teaching	1-2	3-4	5-6
3-4	t = 4.43 df = 144 p = .00		
5-6	t = 3.18 df = 197 p = .00	t = 1.76 df = 183 p = .08	
7+	t = 5.50 df = 185 p = .00	t = 0.69 df = 171 p = .49	t = 1.76 df = 224 p = .08

Significant differences were detected among the means of student ratings of science teachers categorized by the number of years they taught. When the means of student ratings of science teachers in the experience categories of 3-4 years, 5-6 years and over 7 years were compared, significant differences (.05) were not detected. The ratings of teachers in these categories were significantly higher than those of teachers having only 1-2 years of experience.

The analysis for the comparison of ratings among the different categories of science teachers based on the number of years in a school system appear in Table 3-11.

Table 3-11

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Number of Years in a School System

Number of Years in School System	n	m	SD	Nr	
1-2	70	3.79	.48	1650	
3-5	55	3.88	.48	1197	
6-8	26	3.95	.37	552	
9+	44	3.86	.46	1006	
Source	SS	df	ms	F	p	E^2
Between groups	.59	3	.20	.90	.44	.014
Within groups	41.62	191	.22			
Totals	42.21	194				

Significant differences were not detected among the means of student ratings of science teachers categorized according to the number of years they served a school system.

The extent and type of relationships between student ratings of science teachers and science teachers' perceptions of their classes were analyzed using coefficients of correlation. The science teachers' perceptions of science classes consisted of the mean of the ratings of four class characteristics that science teachers used to rate their classes. The characteristics were (1) ability, (2) behavior, (3) industry, and (4) attitude. The response categories, and rating values of each characteristic were Poor (1); Fair (2); Average (3); Good (4); and Excellent (5). These data appear in Table 3-12.

Table 3-12

Coefficient of Correlation for the Relationship Between Science Teacher Perceptions of Science Classes and Student Ratings of Science Teachers

Matched Pair			n	r	p	r^2
Teacher Perception of Class	x	Student Ratings of Teacher	161	.31	.01	.096

A significant positive, although not high, relationship was detected between science teachers' perceptions of science classes and student ratings of science teachers.

5. What relationships exist among student ratings of science teachers and certain community characteristics, namely, type of community and socio-economic status of the community?

The science teachers indicated on the Teacher ID Form that their communities were either large urban, small urban, suburban, or rural and were either low, average, or middle class socio-economically. Ratings for teachers from large and small urban communities were combined in this study.

The analysis for comparing the ratings for science teachers from different types of communities appears in Table 3-13.

Table 3-13

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Type of Community

Type of Community	n	m	SD	Nr	
Urban	47	3.90	.52	1026	
Suburban	98	3.86	.44	2247	
Rural	50	3.79	.45	1132	
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	.33	2	.16	.75	.48	.008
Within groups	41.88	192	.22			
Totals	42.21	194				

Significant differences were not detected among the means of student ratings when science teachers were categorized according to type of community.

The analysis for comparing the ratings for science teachers from the different socio-economic communities are found in Table 3-14.

Table 3-14

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Socio-Economic Status of the Community

Socio-Economic Status of the Community	n	m	SD	Nr	
Low	14	4.03	.43	312	
Average	98	3.87	.43	2150	
Middle Class	83	3.81	.51	1943	
Source	SS	df	ms	F	p	E^2
Between groups	.60	2	.30	1.38	.25	.014
Within groups	41.61	192	.22			
Totals	42.21	194				

Significant differences were not detected among the means of student ratings of science teachers categorized according to the socio-economic status of their community.

6. What relationships exist among student ratings of science teachers and certain classroom characteristics, namely, class size and student sex ratio?

The analyses for comparing the student ratings among science teachers of different size classes appear in Tables 3-15 and 3-16.

Table 3-15

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Class Size

Class Size	n	m	SD	Nr
<20 Students	106	3.75	.54	1643
20-26 Students	137	3.77	.45	3098
>26 Students	127	3.59	.46	4162

Source	SS	df	ms	F	p	E^2
Between groups	2.43	2	1.21	5.21	.01	.027
Within groups	85.43	367	.23			
Totals	87.86	369				

Table 3-16

t-tests for the Relationships Between Size of Classes and Student Ratings of Science Teachers

Class Size	<20	20-26
20-26	t = 0.31 df = 241 p = .76	
>26	t = 2.41 df = 231 p = .02	t = 3.17 df = 262 p = .00

Significant differences were found among the means of student ratings of science teachers of different size classes. When the means of student ratings of the science teachers of classes with <20 and 20-26 students were compared, significant differences (.05) were not found. The mean rating of teachers with classes of ≤26

students were significantly higher than that of those with classes of >26 students.

The sex ratio of science classes was determined by the ratio of the number of males in the class to the total number of students. Science teachers of classes with >66% males were classified as teaching classes with a majority of male students. Science teachers of classes with $\geq$33% males but $\leq$66% males were classified as teaching mixed classes. Science teachers of class with <33% males were classified as teaching classes with a majority of female students. These data appear in Table 3-17.

Table 3-17

Analysis of Variance for the Relationships Among Student Ratings of Science Teachers and Class Sex Ratio

Sex Ratio	n	m	SD	Nr	
Majority male	71	3.87	.49	1421	
Mixed	107	3.84	.47	2592	
Majority female	9	4.00	.46	398	
Source	**SS**	**df**	**ms**	**F**	**p**	**E^2**
Between groups	.24	2	.12	.53	.59	.005
Within groups	42.16	184	.23			
Totals	42.40	186				

Significant differences were not detected among means of student ratings of science teachers classified according to the sex ratio of their classes.

This chapter described the analysis of the data and discussed the significances of the findings. The conclusions and implications will be discussed further in Chapter IV.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The Problem

The purpose of this study was to determine what relationships might exist between certain characteristics of junior-high and high-school science teachers and student ratings of these teachers. Some elements considered in the analyses were these:

1. Time Period - Data were collected for two time periods, 1961-63 and 1968-70, to determine whether or not there was a significant change in student ratings of science teachers between these periods.
2. Teacher Type - The student ratings of science teachers were compared with those of non-science teachers to determine what differences might exist.
3. Type of Science Teacher - Science teachers were categorized according to the science courses they taught in order to determine what differences might exist among student ratings of general science, biology, chemistry, and physics teachers.
4. Teacher Characteristics - Science teachers were categorized according to sex, marital status, age, college degree earned, total teaching experience, number of years in the school system in which these data were collected, and the teacher's perception of his class in order to examine the relationships of these factors to the student ratings of these science teachers.

5. Community Factors - Science teachers were classified as to whether the community in which they taught was rural, suburban, or urban, and also on the basis of the socio-economic level of the community in order to examine the relationships of these factors to the student ratings of these science teachers.

6. Class Factors - Science teachers were categorized according to the sizes and sex ratios of their classes in order to determine the relationships of these factors to student ratings of science teachers.

The characteristics on which students rated teachers and which were used in the various analyses implied in points 1-6 above were these.

1. Knowledge of subject
2. Clarity of presentation
3. Fairness
4. Control
5. Attitude toward students
6. Success in stimulating interest
7. Enthusiasm
8. Attitude toward student ideas
9. Encouragement of student participation
10. Sense of humor
11. Assignments
12. Appearance
13. Openness
14. Self-control

15. Consideration of others

16. Effectiveness

Specifically, answers to the following questions were sought in order to elicit the relationships implied in points 1-6 above.

1. What relationships exist between student ratings of science teachers in 1961-63 and those of science teachers in 1968-70?

2. What relationships exist between student ratings of science teachers and those of non-science teachers?

3. What relationships exist among student ratings of general science, biology, chemistry, and physics teachers?

4. What relationships exist among student ratings of science teachers and certain science teacher characteristics, namely, sex, marital status, age, college degree, experience, number of years in the school system, and the teacher's perception of his class?

5. What relationships exist among student ratings of science teachers and certain community characteristics, namely, type of community and socio-economic status of the community?

6. What relationships exist among student ratings of science teachers and certain classroom characteristics, namely class size and student sex ratio?

Methods employed

The subjects for the study consisted of all general science, chemistry, physics, and biology teachers who voluntarily requested the services of the Student Reaction Center and Educator Feedback

Center at Western Michigan University during the years 1961-63 and 1968-70. For comparative purposes, all non-science teachers who requested the services of the Educator Feedback Center during the years 1968-70 were also included. A total of 142 science teachers was rated by 8633 students in 392 classes during the years 1961-63. A total of 249 science teachers was rated by 9105 students in 379 classes during the years 1968-70. The non-science subjects for the 1968-70 years included 934 teachers. They were rated by 41,329 students from 1680 classes. The teachers included in this study were mainly from the North Central States.

Student ratings of the teachers in this study were measured by the Student-Opinion Questionnaire and the Teacher-Image Questionnaire developed for use in the Educator Feedback Center at Western Michigan University. The major dependent variables consisted of an average of the ratings of the teacher characteristics common to various forms of the questionnaires (see Table 2-4). The data compiled from teacher responses to inquiries on the Class ID Form and the Teacher ID Form were the independent variables in the study.

Analysis of data

The primary statistical treatment used in this study was the one-way analysis of variance. Coefficients of correlation and t-tests were computed where deemed appropriate. The probability level, strength of association and strength of determination were reported for interpretation of significance for each comparison. Results of the statistical analyses collected for this study are summarized

below. It should be noted that the first point is based on data collected during both the 1961-63 and 1968-70 periods. The remaining points are based on data collected during the 1968-70 period only.

1. Science students from the 1961-63 period rated the teacher characteristic of interest significantly higher than those from the 1968-70 period. Significant differences were not detected between student ratings of the two periods for the five other characteristics of knowledge of subject matter, clarity of presentation, fairness, control, and attitude toward students.

2. Of sixteen teacher characteristics that were investigated, science teachers were rated significantly higher than non-science teachers on fairness, attitude toward student ideas, sense of humor, and self-control. Science teachers were also rated higher on ten of the remaining twelve characteristics, although these differences were not significant according to the criterion for significance established in this study ($p \leq .05$ and $E^2 \geq .015$).

3. Significant differences were not detected among the mean ratings of teacher characteristics of general science, biology, chemistry and physics teachers.

4. Significant differences were detected between student ratings of science teachers and the teacher characteristics of age, college degree, teaching experience, teachers' perceptions of classes, and size of class taught. The specific natures of

the relationships detected were these:

(a) Science teachers from 26 to 45 years of age were perceived by their students to be more effective than younger or older teachers.

(b) Science teachers with a Master's degree were rated more favorably by their students than those teachers whose highest degree was the Bachelor's degree.

(c) Science teachers with more than two years of teaching experience were rated more favorably than teachers who had only two years, or less, of teaching experience.

(d) A positive relationship was found to exist between teachers' perceptions of their classes and students' ratings of teacher effectiveness.

(e) Students in classes with enrollments of 26 or more rated their teachers less favorably than students in smaller classes.

Conclusions

Insofar as the results of the analysis of the data are justified, the following conclusions seem defensible.

1. Except for the teacher characteristic of interest, there was little difference between student ratings of science teachers of the 1961-63 period and those of the 1968-70 period. The investigator suggests the following reasons for this phenomenon:

(a) The attempt to improve science content, materials, and methodology during the decade of the 60's may have had

little effect on modifying the behavior of science teachers or the attitudes of students toward them.

(b) Possibly only a few science teachers in this study have been involved directly in efforts to improve science teaching.

(c) Possibly the rating instruments used in this study were not sensitive to real changes in behavior that might have occurred.

The significantly lower ratings that science teachers received from students during the 1968-70 period may possibly be attributed to the following:

(a) Students may view the increasing militance of teachers, allegedly designed to improve their professional status, as a diversion from the more important concerns of classroom teaching.

(b) In general, recently developed science curricula have less apparent structure and are more open-ended than those found in the older, more traditional curricula. Some students, who responded positively to the structured curriculum in their first years of schooling may equate the more open-ended teaching approaches with a lack of interest, or disorganization, on the part of the teacher.

2. Although only the teacher characteristics of fairness, attitude toward student ideas, sense of humor, and self-control were found to be significantly higher for science teachers than for non-science teachers, student ratings on ten of the remaining twelve

characteristics were higher, although not significantly, for science teachers than for non-science teachers. Only on the teacher characteristic of clarity of presentation were science teachers rated lower. The following reasons are suggested for these findings:

(a) In science classes there is generally a greater variety of classroom activities than in non-science classes. This variety may lead to greater overall interest in classroom science on the part of the students. This greater interest may be reflected in higher overall ratings of their teachers.

(b) The higher ratings of science teachers than for non-science teachers on the characteristics of fairness, attitudes toward student ideas, sense of humor, and self-control might be attributed to the emphasis many science teachers place on scientific method in dealing with facts and investigating ideas. This emphasis may include the acknowledgment of (1) incomplete data when all facts about a particular problem are not known, (2) the tentative nature of all conclusions, and (3) the acceptance of alternative hypotheses for interpreting incomplete data.

(c) Generally, students in biology, chemistry and physics classes have higher abilities than the average for all students and greater interest in classroom activity. This interest may have led to generally higher ratings of classroom teachers.

(d) The lower rating of science teachers than for non-science teachers on the characteristic of clarity of presentation may be due to the inherent complexity of much of the subject matter of the sciences. Also, the emphasis upon using an exploratory method to teach concepts of science is frequently by design less straightforward, and consequently less clear, than a more directed teaching approach that relies more heavily on lecturing.

3. The student ratings on various characteristics of teachers of general science, biology, chemistry, and physics are about the same. The investigator suggests that due to similarities among the sciences with respect to objectives and methodology, students rated teachers of different science courses similarly.

4. The characteristics of age, college degrees earned, teaching experience, and the teacher's perception of his class are significantly related to student ratings. Teachers of middle age, or with a Master's degree, or with more than two years of experience were rated significantly higher than teachers who were younger or older, or had only a Bachelor's degree, or had taught two or fewer years. There was also a significant positive relationship between teachers' perceptions of their classes and student ratings of science teachers.

The investigator suggests that, as might be expected, teachers become more successful in their teaching as they mature in age, gain experience in the classroom, and acquire additional training. Also, some of the less successful teachers may have left the profession

after several years experience. Consequently, the teachers in the more experienced groups may have been rated higher for reasons other than the intrinsic factors cited above. The teachers in the oldest categories may have been rated lower than middle-aged teachers because of the age gap between the teachers and students.

5. A significant relationship was not found between the type of community and the student ratings of science teachers. The investigator suggests that this implies that the factors for which students are asked to rate their teachers transcend size and economic status of the community in which the school is located. However, it is possible that a select group of students elect the more advanced science courses and, therefore, may not be representative of the entire community.

6. Students in large science classes rated their teachers lower than those in smaller classes. The investigator suggests that as the size of a science class increases that the interaction between the teacher and his students decreases, and that this decrease in interaction is reflected in lower ratings by students.

Implications

Insofar as the above conclusions are valid, the following implications seem apparent:

1. Since student ratings of science teachers differ significantly from those of non-science teachers, some adjustment is indicated when judgments are made of science and non-science teachers by student rating techniques.

2. Since teachers with Master's degrees are rated higher than those with Bachelor's degrees, it seems apparent that teachers should be encouraged to continue their education beyond the Bachelor's degree.

3. Since teachers with large classes were rated lower than those with smaller classes, it seems apparent that school administrators should attempt to limit the sizes of high-school and junior-high science classes.

Recommendations for future research

1. Since the student ratings of science and non-science teachers differ significantly, it seems apparent that normative data be established for evaluating different kinds of teachers.

2. Attempts should be made to classify or judge teachers according to their behaviors in the classroom, and to measure the relationships of various categories of teacher behavior to student ratings.

3. The student ratings of science teachers seem to be independent of the type and economic status of the communities in which the teachers are employed. It seems apparent that similar comparisons should be made with student ratings of teachers of other subjects to see if this independence applies only to science, or to other subject areas as well.

4. Attempts should be made to identify other teacher factors that may be related to student ratings such as a teacher's reading habits and participation in professional teaching organizations.

BIBLIOGRAPHY

Barr, A. S., "The Measurement and Prediction of Teaching Efficiency: A Summary of Investigations." Journal of Experimental Education, XVI (June 1948), 203-83.

Brandwein, P. F., The Gifted Student as Future Scientist. New York: Harcourt, Brace and Company, 1955. Pp. 107.

Bryan, Roy C., "Some Observations Concerning Written Reactions to High School Teachers." 1967-68 Annual Report of the Student Reaction Center, Western Michigan University, Kalamazoo, Michigan, 1968. Pp. 15.

Coats, William C., "Student Perceptions of Teachers - A Factor Analytic Study." An unpublished manuscript, presented at the Annual Meeting of the American Educational Research Association, Minneapolis, Minnesota, March 2-6, 1970. Pp. 9.

Cogan, M. L., "The Behavior of Teachers and the Productive Behavior of Their Pupils: I. Perception Analysis." Journal of Experimental Education, XXVII (December 1958), 89-105.

Cogan, M. L., "The Behavior of Teachers and the Productive Behavior of Their Pupils: II. Trait Analysis." Journal of Experimental Education, XXVII (December 1958), 107-24.

Domas, Simeon J., and Tiedman, David V., "Teacher Competence: An Annotated Bibliography." Journal of Experimental Education, XIX (December 1950), 101-218.

Grieder, Calvin, "Educators Should Welcome Pressure for Accountability." Nation's Schools, LXXV (May 1970), 14.

Knapp, R. H., and Goodrich, H. B., Origin of American Scientists. Chicago: University of Chicago Press, 1952. Pp. v + 450.

Morsh, J. E., and Wilder, E. W., "Identifying the Effective Instructor: A Review of Quantitative Studies, 1900-1952." Research Bulletin AFPTRC-TR-54-55, October 1954. Pp. 124.

Reed, H. B., Jr., "Teacher Variables of Warmth, Demand and Utilization of Intrinsic Motivation Related to Pupils' Science Interest: A Study Illustrating Several Potentials of Variance-Covariance." Journal of Experimental Education, XXIX (March 1961), 205-29.

Ryan, D. G., Characteristics of Teachers, Washington, D.C., American Council on Education, 1960. Pp. v + 400.

Wilson, Dale T., "A Study of Factors Related to Student Ratings of Teachers." Unpublished doctoral dissertation, Western Michigan University, Kalamazoo, Michigan, April 1971. Pp. ii + 124.

APPENDICES

APPENDIX A

EDUCATOR FEEDBACK CENTER

Western Michigan University

To_____ Date_____

1. Enclosed are _____ Teacher-Image Questionnaires for _____ of your classes as per service order.

   Also enclosed are _____ large, addressed envelopes in which the answered Teacher-Image Questionnaires should be returned (one envelope for each class), and the same number of sheets titled, "Instructions for Person in Charge of Class."

2. Your service order specified _____ as the approximate date on which students will answer the questionnaire. If you postpone this item of business by more than three weeks, we shall appreciate a note from you giving the new target date. Also, if your service order covers more than one class, we shall appreciate it if you will administer the questionnaire to the specified number of classes on the same date or as close to the same date as possible.

3. Please insert the information called for on the face of each large, return envelope. Please complete the two blue forms (Class ID and Teacher ID) and insert them in the envelope prior to administering the questionnaire.

4. Someone other than yourself should be in charge of each class during the 15 or 20 minutes needed by your students to answer the questionnaire. That "someone" is usually a fellow teacher and will be referred to as the "Person in Charge." You should turn over to your temporary substitute the following for each class:

   a. The needed number of Teacher-Image Questionnaires.

   b. The large, return envelope on which you have already written the information called for under point 3 above and in which you have inserted the two blue ID forms.

   c. A copy of the instructions bearing the title, "Instructions for Person in Charge of Class."

APPENDIX A (cont'd)

Tell your temporary substitute what to do with the large, return envelope after he has enclosed answered questionnaires and sealed the envelope. He should know whether the envelope should be placed directly in the outgoing mail or delivered to someone who is collecting the envelopes from different teachers to be packaged for mailing.

5. Your report will be sent to you within three weeks after receipt here of answered questionnaires. After you have received your report, we shall appreciate hearing from you if you have any reactions to the service rendered by the Educator Feedback Center.

APPENDIX A (cont'd)

EDUCATOR FEEDBACK CENTER

Western Michigan University

INSTRUCTIONS FOR PERSON IN CHARGE OF CLASS

BEFORE MEETING WITH STUDENTS

You will be in charge of this class for the 15 or 20 minutes needed by students to answer the Teacher-Image Questionnaire.

Make sure that all the information called for on the face of the large, return envelope has been supplied.

WHILE ADMINISTERING THE QUESTIONNAIRE

Read the following instructions, exactly as written, to the class:

> "Please answer the following questions honestly and frankly. Do not give your name. To encourage you to be frank, your regular teacher is absent from the classroom while these questions are being answered. Neither your teacher nor anyone else at your school will see your answers.
>
> The person who is temporarily in charge of your class will collect all reports after you have completed them and seal them in an envelope addressed to Western Michigan University. Your teacher will receive from the University a summary of the answers by the students in your class. The university will mail this summary to no one except your teacher unless requested to do so by your teacher.
>
> After you have completed this report, sit quietly or study until all students have completed their questionnaires. There should be no talking."

While administering this Teacher-Image Questionnaire, exhibit the same attitude that is appropriate when administering any test or examination.

Make sure that students understand that they should answer the questions regarding their regular teacher and not concerning you, the temporary substitute in charge.

Students should be given all the time needed to answer questions 17 and 18. If students are hurried, they are inclined to omit answers to these questions.

APPENDIX A (cont'd)

It is desirable that you remain seated at the desk rather than circulate among the students while they are answering the questionnaire.

After all questionnaires have been answered, have one student collect all copies for delivery to your desk. Promptly seal the answered questionnaires in the envelope addressed to Western Michigan University in the presence of the students.

AFTER THE ENVELOPE HAS BEEN SEALED

You should mail the envelope to Western Michigan University unless envelopes from a number of classrooms are being collected at a central location for packaging. In the latter event, you should deliver the envelope to the "central location."

APPENDIX B

To be completed by teacher being rated and inserted in the large return envelope prior to administering the questionnaire.

TEACHER ID FORM

Educator Feedback Center
Western Michigan University
Kalamazoo, Michigan

Date _____

1. Name_____

2. Name of School_____

   Address_____ City_____ State_____ Zip_____

3. Home Address_____ City_____ State_____ Zip_____

4. Sex: Male_____ Female_____

5. Highest degree held_____

6. Major Subject area (undergraduate)_____

   Major Subject area (graduate)_____

7. Socio-economic status of the community in which you work:

   Low_____ Average_____ Middle Class_____

8. Type of community:

   Large Urban_____ Small Urban_____ Suburban_____ Rural_____

9. Number of years in this school_____

10. Number of years teaching_____

APPENDIX B (cont'd)

The remaining items on this form are included primarily for research interests of the Educator Feedback Center. Therefore, your responses to the following items are requested but not required.

11. Marital Status: (check one) Married_____ Separated_____ Single_____ Divorced_____ Widowed_____

12. Age Bracket: (check one) 20-25_____ 26-35_____ 36-45_____ 46-55_____ 56-65_____ 66 or over_____

13. Race: (check one) Caucasian_____ Negro_____ Other_____

APPENDIX C

To be completed by teacher being rated and inserted in the large return envelope prior to administering the questionnaire.

CLASS ID FORM

Educator Feedback Center
School of Education
Western Michigan University

Date_____

Name of teacher being rated:_____

School Address:_____

Please check the appropriate responses below:

Subject:_____ Hour_____

Grade level:_____

Approximately what percentage of this group is female_____; male_____

Caucasian_____; Negro_____; other_____

How do you perceive this class along the following dimensions? Place an "X" in the appropriate space.)

	Excellent	Good	Average	Fair	Poor
Ability					
Behavior					
Industry					
Attitude					

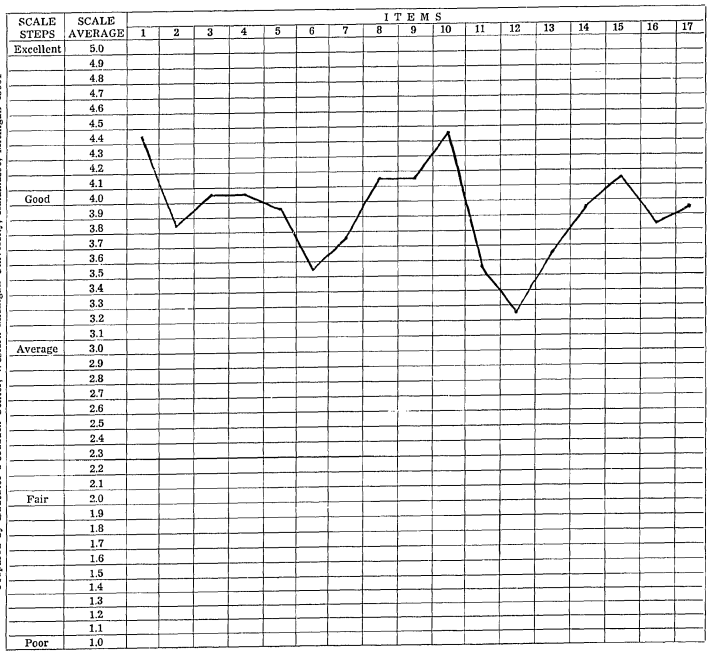
APPENDIX D

TEACHER IMAGE PROFILE

Teacher John Smith No. Date

Class A: Subject Chemistry Period

Class B: Subject Period



Prepared by Educator Feedback Center, Western Michigan University, Kalamazoo, Michigan 49001

KEY TO ITEMS

1. Knowledge
2. Clarity of presentation
3. Fairness
4. Control
5. Attitude toward students
6. Interest
7. Enthusiasm
8. Attitude toward student ideas
9. Encouragement
10. Sense of humor
11. Assignments
12. Appearance
13. Openness
14. Self-control
15. Consideration
16. Overall evaluation
17. Av.=Mean of averages 1-16

Form TIP-0869

SUMMARY OF COMMENTS

18. Weaknesses listed by a significant number of students:

19. Strengths listed by a significant number of students:

APPENDIX E

FACTORS TO CONSIDER WHEN INTERPRETING AND UTILIZING YOUR TEACHER IMAGE PROFILE

The major objective of the Center is to provide feedback for improving teacher effectiveness. We, here at the Center, sincerely hope that our feedback will help you to do a better job of teaching. The following discussion should assist you in interpreting and utilizing your image profile. Specific research citations supporting statements made here and results of research studies regarding teacher image may be obtained upon request from the Center.

Criteria For Measuring Teacher Effectiveness

There are three basic criteria by which effectiveness is judged. Researchers usually divide these into: (1) product criteria, (2) presage criteria, and (3) process criteria. The feedback provided by the Center is based primarily on process criteria for reasons discussed below.

Product criteria refer to stable or long term outcomes of the teaching-learning from now as well as various types of meaningful student learning. A little thought reveals that, due to the overwhelming influence of hereditary and environmental factors, measures of important product criteria for a particular group of students require research skills unfamiliar to most classroom teachers. Consequently, product criteria are not very useful in terms of providing feedback for immediate improvement of teaching effectiveness.

Presage criteria refer to teacher experiences which are presumably related to teacher effectiveness. These criteria include factors such as years of teaching experience, intelligence and degrees held. Most research studies indicate that there is no relationship between presage criteria and teaching effectiveness. So, measures of presage criteria are of little practical use to the teacher in his effort to improve his effectiveness.

Process criteria refer to those variables which are operating during a given teaching-learning situation. Variables of this type are: (1) teacher attitudes, (2) teacher behavior, and (3) student perceptions. Of these three process variables student perceptions are the most useful for purposes of providing teachers with feedback for improving teaching effectiveness. Of course, a teacher's attitudes and behaviors are related to student's perception of the

APPENDIX E (cont'd)

teacher which is important. Often two teachers having dissimilar attitudes and exhibiting very different teacher behaviors are both perceived quite favorably by students. There simply is no single teaching technique which has been shown to be universally effective for all teachers in all situations.

A number of behavioral science researchers have conducted studies which support the contention that persons pay more attention to, are more influenced by, and learn more from other persons (teachers) whom they perceive as being competent, enthusiastic and sincere. Furthermore, studies indicate that students have higher regard for themselves, their teachers, the school, and the subject in classrooms where they feel free to participate and initiate their own ideas than in classrooms where they feel restricted. The Center learns how students "feel" about and "perceive" important characteristics of their teacher by simply asking them through our Teacher-Image Questionnaire. Responses to our questionnaire may then be used as feedback for improving teacher effectiveness.

Relation of Image to Attitudes and Behavior

In interpreting your image profile you should understand that problems regarding perceived teacher effectiveness along the dimensions measured by the Teacher-Image Questionnaire have one or two general sources. These sources are: (1) poor teacher attitudes and (2) ineffective teacher behavior. Some thought about the nature or relationships between these two variables and responses to the Teacher-Image Questionnaire suggests that perceived ineffectiveness with respect to any question posed in the questionnaire is a function of at least one of these sources.

If a teacher has negative attitudes toward himself, his subject, his students, or the general educational system, then it may be difficult for him to teach in a manner which is perceived as effective by his students or anyone else. One solution to this problem might be for the teacher to engage in "phony" behaviors designed to maximize his perceived effectiveness. This type of solution is similar to that used by the salesman who is successful in terms of sales, but has little confidence in his product. Of course, the best solution to poor teacher attitudes is a change in these attitudes. A teacher should make every effort to respect himself and his students and to become excited about his subject and teaching in general.

Although a teacher may have healthy attitudes regarding those factors important to teaching success, he may behave in a manner which belies his true attitudes, intentions, and understandings. Teachers who love their students, but are perceived as disliking them, are simply not communicating effectively. The same is true

APPENDIX E (cont'd)

for competent teachers perceived as bored, etc. A teacher may improve the effectiveness of his teaching behavior by experimenting with different behaviors and noting resulting changes in his image as measured by the Teacher-Image Questionnaire. This experimentation should be based as much as possible on improved understanding of the attitudes of students and probable relationships between these attitudes and the way students are likely to react to various teacher behaviors.

Finally, a teacher may have good attitudes, be competent, and engage in acceptable behaviors, but may desire and achieve a rather low image in some areas due to student attitudes over which a teacher may have limited control. For example, some teachers may be so committed to encouraging student participation that they tend to be unconcerned about student perception of their knowledge and classroom control. When a competent teacher with good attitudes obtains low scores on some dimensions of the image profile by intent, then these low scores should not necessarily be interpreted as representing a problem for him. He may be achieving his desired level of perceived effectiveness.

In all cases remember that your profile represents "perceptions" about you, your attitudes, understandings, skills, and behavior is not necessarily a direct measure of your actual attitudes, understandings, etc. Hence, in many cases the perception may be incorrect, although this is not likely. That is, you may be fair but perceived as not being fair. You are encouraged here to be concerned about your image as a leader in your class even though it may be inaccurate. It does little good for a teacher to encourage student participation if students do not then feel free to raise questions, express opinions, and initiate new ideas.

APPENDIX E (cont'd)

TABLE I

MEAN ITEM SCORES FOR TEACHER-IMAGE QUESTIONNAIRE
N = 1427

Number	Item	Mean	Std. Dev.
1	Knowledge of Subject	3.88	.56
2	Clarity of Explanations	3.33	.59
3	Fairness	3.35	.65
4	Control	3.24	.77
5	Attitude Toward Students	3.48	.68
6	Ability to Stimulate Interest	3.09	.73
7	Attitude Toward Subject	3.87	.55
8	Attitude Toward Student Opinions	3.56	.59
9	Variety in Teaching Procedures	2.98	.66
10	Encouragement of Student Participation	3.66	.53
11	Sense of Humor	3.71	.70
12	Planning and Preparation	3.41	.62

Significant gains in student-reaction averages are not easy to come by. Student-reaction or image averages are stubbornly stable, but they can be changed with persistence and well-directed effort. It has been our experience that most (69%) teachers are able to make significant and favorable modifications in their image with a concentrated effort based on the feedback revealed in a Teacher-Image Profile.

Teachers are invited to write to us for additional research results or when they have questions, suggestions, or requests for special service. Of course, a teacher's image report is prepared solely for the benefit of the teacher, and is held in strict confidence; a given teacher's file is closed to everyone except that teacher.

APPENDIX E (cont'd)

Additional Comments

As stated above it should be noted that a student reaction or image report is simply a report on how students are reacting to a teacher. Student reactions are student opinions; they reflect student understandings, misunderstandings, insights, prejudices, likes, dislikes, fears, and satisfactions. They tell the teacher much about the effects his ways of doing things have on students. Students know whether the teacher is "getting through to them" and whether they are interested or bored. They can reliably report their opinions on these and the other items contained in the opinion questionnaire.

Student-reaction reports do not represent teacher rating by students any more than subject-matter tests represent teacher rating by students. In the latter case, the teacher learns something about the facts and understandings gained by students. In the former case, the teacher learns something about student attitudes and opinions concerning the subject and teacher. A teacher's efficiency in teaching facts and understandings is conditioned by students' emotional reactions to the teacher and other elements in the classroom situation.

Differences in opinions concerning one teacher will be found among students in one class. Since students differ in academic ability, personality, interests, home background, and aspirations, they cannot be expected to react alike to elements in the teaching situation. Even the teachers with high prestige will not get favorable responses from all their students.

This does not mean that there is no agreement between groups of students. For example, if the responses of a chance-half of the students in a class of 30 produces an average of 3.5 on a given question, the average of responses by the other 15 students in the same class will usually be 3.5 or close to that number. The fact that there is a difference of opinion within chance-half groups does not mean that there is not close agreement between the halves. One chance-half group of fair size will usually contain about the same number of dissenters from majority opinion as the other. The reliability coefficients for the different scaled questionnaire questions using 50 teachers (one class per teacher) range from .83 to .94.

Table I on the preceding page shows means and standard deviations of student reactions for 1,427 teachers who used the Teacher-Image Questionnaire during the 1967-69 school years. These teachers taught many different subjects and their teaching experience ranged from several months to many years. Data for only 12 questions in the current questionnaire remain the same as those used

APPENDIX E (cont'd)

during the previous school years. The weight assigned to the scale steps accompanying each question follows: Poor = 1, Fair = 2, Average = 3, Good = 4, and Excellent = 5.

The data in Table I show that most teachers received relatively high student-reaction averages on question 1 (knowledge of subject) and 7 (attitude toward subject). The same is true to a lesser degree with reference to questions 10 (encouragement of student participation) and 11 (sense of humor). On the other hand, most teachers received lower averages on question 6 (ability to stimulate interest) and 9 (variety in teaching procedures).

APPENDIX F

STUDENT-OPINION QUESTIONNAIRE

(Form A)

Please answer the following questions honestly and frankly. Do not give your name. To encourage you to be frank, your regular teacher should be absent from the classroom while these questions are being answered. Neither your teacher nor anyone else at your school will ever see your answers.

The person who is temporarily in charge of your class will, during this period, collect all reports and seal them in an envelope addressed to Western Michigan University. Your teacher will receive from the University a summary of the answers by the students in your class. The University will mail this summary to no one except your teacher unless requested to do so by your teacher.

After completing this report, sit quietly or study until all students have completed their reports. There should be no talking.

Encircle your answers to questions 1-10. Write your answers to questions 11-14.

WHAT IS YOUR OPINION CONCERNING:

1. THE KNOWLEDGE THIS TEACHER HAS OF THE SUBJECT TAUGHT?
   (Has he a thorough knowledge and understanding of his teaching field?)

   Below Average Average Good Very Good The Very Best

2. THE ABILITY OF THIS TEACHER TO EXPLAIN CLEARLY?
   (Are assignments and explanations clear and definite?)

   Below Average Average Good Very Good The Very Best

3. THIS TEACHER'S FAIRNESS IN DEALING WITH STUDENTS?
   (Is he fair and impartial in treatment of all students?)

   Below Average Average Good Very Good The Very Best

4. THE ABILITY OF THIS TEACHER TO KEEP GOOD DISCIPLINE?
   (Does he keep good control of the class without being harsh? Is he firm but fair?)

   Below Average Average Good Very Good The Very Best

APPENDIX F (cont'd)

5. THE SYMPATHETIC UNDERSTANDING SHOWN BY THIS TEACHER?
(Is he patient, friendly, considerate, and helpful?)

Below Average Average Good Very Good The Very Best

6. THE ABILITY THIS TEACHER HAS TO MAKE CLASSES INTERESTING?
(Does he show enthusiasm and a sense of humor? Does he vary teaching procedures?)

Below Average Average Good Very Good The Very Best

7. THE ABILITY OF THIS TEACHER TO GET THINGS DONE IN AN EFFICIENT AND BUSINESSLIKE MANNER?
(Are plans well made? Is little time wasted?)

Below Average Average Good Very Good The Very Best

8. THE SKILL THIS TEACHER HAS TO GET STUDENTS TO THINK FOR THEMSELVES?
(Are students' ideas and opinions worth something in this class? Do students help decide how to solve problems and how to get their work done? Do they get at the real reasons why certain things happen?)

Below Average Average Good Very Good The Very Best

9. THE GENERAL (ALL-ROUND) TEACHING ABILITY OF THIS TEACHER?
(All things considered, how close does this teacher come to your ideal?)

Below Average Average Good Very Good The Very Best

10. WHAT IS YOUR OPINION CONCERNING THE AMOUNT OF WORK REQUIRED OR EXPECTED BY THIS TEACHER? Underline your answer.

a. The assignments require practically no time to prepare

b. Require less time than might reasonably be expected

c. Are reasonable assignments

d. Require a little more time than I think is fair to ask of students

e. Require much more time than is fair to ask of students

11. PLEASE NAME ONE OR TWO THINGS THAT YOU ESPECIALLY LIKE ABOUT THIS TEACHER.

APPENDIX F (cont'd)

12. PLEASE GIVE ONE OR TWO SUGGESTIONS FOR THE IMPROVEMENT OF THIS TEACHER.

13. PLEASE NAME ONE OR TWO THINGS THAT YOU ESPECIALLY LIKE ABOUT THIS COURSE.

14. PLEASE GIVE ONE OR TWO SUGGESTIONS FOR THE IMPROVEMENT OF THIS COURSE.

APPENDIX G

TEACHER-IMAGE QUESTIONNAIRE

Do not begin until you are told
to do so by the person in charge.

WHAT IS YOUR OPINION CONCERNING THIS TEACHER'S:

USE LEAD PENCIL.

1.	KNOWLEDGE OF SUBJECT: (Does he have a thorough knowledge and understanding of his teaching field?)	Poor	Fair	Avg.	Good	Exc.
2.	CLARITY OF PRESENTATION: (Are ideas presented at a level which you can understand?)	Poor	Fair	Avg.	Good	Exc.
3.	FAIRNESS: (Is he fair and impartial in his treatment of all students in the class?)	Poor	Fair	Avg.	Good	Exc.
4.	CONTROL: (Is the classroom orderly but also relaxed and friendly?)	Poor	Fair	Avg.	Good	Exc.
5.	ATTITUDE TOWARD STUDENTS: (Do you feel that this teacher likes you?)	Poor	Fair	Avg.	Good	Exc.
6.	SUCCESS IN STIMULATING INTEREST: (Is this class interesting and challenging?)	Poor	Fair	Avg.	Good	Exc.
7.	ENTHUSIASM: (Does he show interest in and enthusiasm for the subject? Does he appear to enjoy teaching this subject?)	Poor	Fair	Avg.	Good	Exc.
8.	ATTITUDE TOWARD STUDENT IDEAS: (Does this teacher have respect for the things you have to say in class?)	Poor	Fair	Avg.	Good	Exc.

APPENDIX G (cont'd)

9.	ENCOURAGEMENT OF STUDENT PARTICIPATION: (Does this teacher encourage you to raise questions and express ideas in class?)	Poor	Fair	Avg.	Good	Exc.
10.	SENSE OF HUMOR: (Does he share amusing experiences and laugh at his own mistakes?)	Poor	Fair	Avg.	Good	Exc.
11.	ASSIGNMENTS: (Are assignments sufficiently challenging without being unreasonably long?)	Poor	Fair	Avg.	Good	Exc.
12.	APPEARANCE: (Are his grooming and dress in good taste?)	Poor	Fair	Avg.	Good	Exc.
13.	OPENNESS: (Is this teacher able to see things from your point of view?)	Poor	Fair	Avg.	Good	Exc.
14.	SELF-CONTROL: (Does this teacher become angry when little problems arise in the classroom?)	Poor	Fair	Avg.	Good	Exc.
15.	CONSIDERATION OF OTHERS: (Is he patient, understanding, considerate, and courteous?)	Poor	Fair	Avg.	Good	Exc.
16.	EFFECTIVENESS: (What is your overall evaluation of your teacher's effectiveness?)	Poor	Fair	Avg.	Good	Exc.

If you wish, please list one or more weaknesses of your teacher:

If you wish, please list one or more strengths of your teacher: