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An examination of teacher-pupil interaction in

third-year French classes

by

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INTRODUCTION

The teaching of foreign languages has experienced dramatic changes in the past fifteen years and continues in an evolutionary state. These changes have been an outgrowth of inter-disciplinary research by language teachers, linguists, psychologists, and anthropologists who have been interested in developing adequate instructional techniques and technologies for effective language teaching.

Concomitantly, within the last decade, increased attention has been devoted to the study of teacher and pupil verbal behavior in the classroom as a method for improving teaching. A number of researchers have developed category systems for the systematic observation of teacher and pupil behaviors, termed teacher-pupil interaction, in the actual classroom setting.

The focus of such research has been on the analysis of teacher behavior and on teaching per se. Basic to this research is the conception that knowledge of the teaching process can be obtained by the classification and description of teacher behavior in the classroom. Medley and Mitzel (40, p. 247) pointed out that there is no more obvious approach to research on teaching than direct observation of the behavior of teachers while they teach.

The aspect of classroom behavior that has been studied and measured most successfully through verbal interaction analysis is that of the psychological climate.

> The dimension of classroom behavior which we have called classroom climate has been measured more successfully than any other.
> There are differences in the terms applied to the dimension as

it has been operationally defined in various studies -- dominative-
integrative, teacher-centered versus learner-centered, hostile-
supportive, direct-indirect influence. Yet there is little question
that all are referring to highly similar, even identical, dimensions
of behavior, reliably measurable, and important in educational
theory (40, p. 274).

Evidence of the use of interaction analysis as a strategy for re-
search on teaching has appeared increasingly in the literature on teach-
ing and research on teaching in recent years.

Anderson's studies (5, 6, 7) had a major influence in the develop-
ment of research in classroom climate; however, Flanders must be
credited with bringing interaction analysis to the fore as a technique
for research on teaching.

According to Medley and Mitzel (40, p. 271), Flanders has developed
the most sophisticated technique for observing climate thus far, one
which is unique in that it preserves a certain amount of information re-
garding the sequence of events in the classroom. He polarized teacher
behavior into direct and indirect teacher influences.

Flanders defines direct influence as consisting of those verbal
statements of the teacher that restrict freedom of action, by focusing
attention on a problem, interjecting teacher authority, or both. In-
direct influence consists of those verbal statements of the teacher that
expand a student's freedom of action by encouraging his verbal par-
ticipation and initiative (28, p. 9).

In essence, a variety of systems and instruments have been de-
veloped for the purpose of systematically observing teacher-pupil inter-
actions in the classroom. With several exceptions, these category

systems can be used to analyze the teaching of any subject and at any grade level. The exceptions are the Wright-Proctor system utilized in the Minnesota Laboratory Five-State Mathematics Study, and perhaps the Bellack system for examining the language of the classroom.

However, a review of literature revealed a paucity of efforts to apply these techniques to the foreign language classroom. Moskowitz (43, p. 218) stated that modern foreign languages have been almost totally forgotten in studies of classroom behavior by systematic observation, and Flanders (25, p. 173) has taken the position that the foreign language classroom provided data that is too variable for efficient analysis. The investigator found few studies in which the actual public school foreign language classroom was the focus of research through interaction analysis.

Need for Study

An acknowledged outcome of research in language teaching and in language learning is the improvement of instruction; however, Carroll (14, p. 1094) has stated that educational research has contributed little to foreign language teaching methodology. He has contended further that research by psychologists and foreign language teachers has failed to produce useful results.

> Psychologists who have tried to investigate elements in the foreign language teaching process have frequently failed to produce useful results because their experimental settings and materials have not been sufficiently similar to those of the actual teaching situation as it occurs in the classroom or in the

language laboratory. At the same time, research undertaken by foreign language teachers has only rarely been adequate with respect to research methodology.

Politzer (50, p. 252) has called for an examination of the foreign language teacher's performance through a pattern of systematic observation and for the creation and validation, in terms of student achievement, of a test measuring the classroom performance of the language teacher.

Bailey (10, pp. 116-118) has discussed the necessity of relating the knowledge of human behavior to the teaching of foreign language, the hypothesis being that there are certain characteristics and approaches which are more or less desirable in a person who teaches a foreign language.

> It is essential to relate knowledge of human behavior to the area of foreign language teaching. . . . The effort would entail . . . cooperation between language specialists and authorities in the behavior sciences -- inter-disciplinary research similar to that which has taken place between language teachers and linguistic scientists in developing the new concepts over the past decade.

He emphasized the studies of Flanders and Mitzel which sought to isolate and identify both teacher behavioral phenomena and their relationship to student achievement, and then to delineate positive and negative factors of their relationship to each other. He concluded that if teacher performance could be correlated to student achievement, these performance criteria would have implications for the curricula for the education of foreign language teachers.

This study, therefore, was designed to move in the direction of applying the results of research in teaching, as suggested by Politzer and

Bailey, to the foreign language classroom in order to develop an objective, systematic analysis of teacher-pupil interactions occurring therein.

If we are to provide the necessary inputs for curriculum development in the initial and continuing preparation of foreign language teachers, we must have available objective information concerning the behavior of teachers and pupils in the classroom. These data can provide the basis for the development of teaching models and strategies for language teaching.

Since methods employed in teaching foreign languages do not vary substantially from language to language and since the investigator has a background in the French language and interest in the teaching of French, it was decided that this subject-matter area would be a suitable field for this study. The third-year high school level was selected as this level provided greater opportunity for verbal interaction in the language between teacher and pupils.

Statement of Problem

The study design for this problem entailed a two-fold examination of teacher-pupil verbal behavior: a quantification of such behavior through a category system and an analysis of these interactions.

The problem for this study was the determination and the examination of the patterns of teacher and pupil verbal behavior in third-year high school French classes. More specifically, the problem investigated attempted to answer the following questions:

1. Are language teachers direct or indirect in their teaching?

2. What are the dominant forms of teacher verbal behavior?

3. What are the dominant forms of pupil verbal behavior?

4. To what extent do pupils exhibit spontaneous use of the foreign language?

5. What is the pattern of English usage?   —

Definition of Terms

Category system - a finite set of categories into one and only one of which every unit of observed behavior can be classified. These categories must be mutually exclusive.

Interaction analysis - a procedure for classifying teacher-pupil verbal contacts into specifically defined categories. The category systems provide a record of the events in the classroom and preserve the sequence of verbal behavior so that the data can be studied through profiles, or matrices.

Direct influence - verbal statements of the teacher which restrict the pupil's freedom, and increase the active control of the teacher.

Indirect influence - verbal statements of the teacher that expand the pupil's freedom of action by encouraging his verbal participation and initiative.

I/D ratio - ratio of indirect teacher influence to direct teacher influence.

i/d ratio - the lower case i/d ratio is a revision of the I/D ratio, and deals basically with categories related to teacher control and

motivation in the classroom situation.

F/E ratio - ratio of the use of foreign language to the use of English.

Teacher F/E ratio - ratio of teacher use of the foreign language to the use of English.

Pupil F/E ratio - ratio of pupil use of the foreign language to the use of English.

Source of Data

Data for the study were obtained from an analysis of tape recordings of third-year high school French classes through a category system and from an examination of the matrices developed from the categories of observed behavior.

Deliminations of Study

This study was restricted to an examination of third-year high school French classes, and to an analysis of the verbal interactions between teachers and pupils in such classes. Consequently, the results of this study refer only to this level of French teaching. The analysis of the data was based on assumptions limiting the generalizations to the participating teachers.

Also, as the investigator was the only rater of the audio magnetic recording, it was not possible to determine rater reliability.

Although the use of audio magnetic tape recordings has been reported

in other studies, it is possible that this technique for collecting
verbal interactions between teachers and pupils did not provide adequate
control. The teachers recorded the classes and mailed the tapes to the
investigator. The presence of the tape recorder might have contaminated
the natural teaching situation.

Organization of Study

The presentation of this study has been organized into six chapters.
The first chapter included the introduction to the problem, a statement
of the problem, need for the study, sources of data, delimitations of the
study, and the organization of the study.

The second chapter, "Review of Literature," contains a summary,
and analysis of pertinent, related research and literature dealing with
developments in the teaching of foreign language, and interaction analysis
as a technique for systematic observation in the classroom.

The third chapter includes a discussion of methodological considera-
tions and the design of the study; the fourth chapter presents the find-
ings of the study. A discussion of the findings with recommendations
for further study is presented in the fifth chapter; the sixth chapter is
the summary.

REVIEW OF LITERATURE

This study utilized a technique of systematic observation to record, to analyze, and to describe teacher-pupil interactions in third-year French classes in a three-state area. A review of the literature revealed little prior research in the application of interaction analysis to the typical foreign language classroom situation. This review focused on two areas: the teaching of foreign languages and observation systems as a technique for quantifying and analyzing teacher-pupil verbal contacts.

Recent Developments in Language Teaching

The teaching of modern foreign languages has experienced profound changes in the period since World War II. The success of the Army Specialized Training Program and its Foreign Area and Language Study Curriculum amazed an American public accustomed to only limited knowledge and utilization of foreign languages, and the influence of these schools on post-war language teaching in high schools and colleges highlighted a new relevance in foreign language study (48, p. 91).

The major reversal of interest in the teaching and study of foreign language did not, however, take effect until the early 1950's. In 1952, Dr. Earl J. McGrath, United States Commissioner of Education, stated publicly his position with regard to the teaching and study of foreign languages:

> For some years I unwisely took the position that a foreign language did not constitute an indispensable element in a general education program. This position, I am happy to say, I have reversed. I

have now seen the light and I consider foreign languages a very important element in general education. . . . Only through the ability to use another language even modestly can one really become conscious of the full meaning of being a member of another nationality or cultural group. It is in our national interest to give as many of our citizens as possible the opportunity to gain these cultural insights. . . . Educators from the elementary school to the top levels of the university system ought to give immediate attention to this matter (48, p. 33).

In 1952, the Rockefeller Foundation awarded a grant of $120,000 to the Modern Foreign Language Association for a three-year study of the specific role that foreign languages and literature should play in American life, and in 1954, this grant was extended for another three-year period.

As a result of this funding, the Modern Language Association established its Foreign Language Program. First, to inform itself about the status of language teaching and second, to inform others of its findings, the Foreign Language Program held significant conferences with elementary- and secondary-school teachers, school administrators, and college and university personnel involved in foreign language education. These conferences were devoted to such subjects as foreign languages in the elementary schools, programmed language instruction, the language laboratory, televised language instruction, language learning, and the anthropological concept of culture (34, p. 118).

Another significant development was that by 1955, college enrollments in French, German, and Spanish had percentage increases about equivalent with those for college enrollments in general (48, p. 94).

Consequently, it was evident that a quiet revolution in language

teaching was under way before the passage of the National Defense Education Act of 1958. The passage of this Act highlighted the urgent need of more competent students of science, mathematics, and modern foreign languages in the educational systems of the United States. The purpose of the Act was stated in Title I, General Provision, Section 101 (62, p. 2):

> The Congress hereby finds and declares that the security of the Nation requires the fullest development of the mental resources and technical skills of its young men and women. The present emergency demands that additional and more adequate educational opportunities be made available. The defense of this Nation depends upon the mastery of modern techniques developed from complex scientific principles. It depends as well upon the discovery and development of new principles, new techniques, and new knowledge.
>
> We must increase our efforts to identify and educate more of the talent of our Nation. This requires programs that will give assurance that no student of ability will be denied an opportunity for higher education because of financial need; will correct as rapidly as possible the existing imbalances in our educational programs which have led to an insufficient proportion of our population educated in science, mathematics, and modern foreign languages. . . . (Emphasis added).

This Act stimulated the public interest in the teaching and study of modern foreign languages. Increased numbers of school administrators became interested in developing more effective and more meaningful language programs. Students responded positively to the emphasis on the teaching of foreign languages, and enrollments increased in all languages; and in many areas of the country, critical languages, such as Arabic, Chinese, and Russian, were added to the curricula of the secondary schools. In the fall of 1960, a total of 2,775,135 students in public secondary schools was enrolled in foreign language courses,

and by 1965, this total had risen to 4,494,212 (63, p. 3).

Attending this growth in the study of foreign languages was a change in teaching methodology and goals. Language for communication became a dominant emphasis with focus on the natural order of the language skills: listening, speaking, reading, and writing.

In the Handbook of Research on Teaching, Carroll listed four characteristics of the method of language teaching toward which there seemed to be convergence (14, p. 1063):

> One characteristic is that items are normally presented and learned in their spoken form before they are presented in their written form. . . . The justification for this emphasis is found in the observation that a language is first of all a system of sounds for social communication; writing is a secondary derivative system for recording of spoken language. ·
>
> Second, contemporary teaching methods are making increasing use of the results of scientific analysis of the contrasts between the learner's language and the target language, because to a considerable extent, the typical learner's difficulties can be identified and predicted in advance on the basis of this "contrastive structure analysis."
>
> Third, contemporary doctrines stress the need for over-learning of language patterns by a special type of drill known as "pattern practice." . . . what seems to be essential is the repetition of sentence patterns with varying elements.
>
> A fourth prominent characteristic of contemporary foreign language teaching is the minimization of the use of the student's native language, and the insistence on the desirability or even the necessity of learning to make responses in situations which simulate "real-life" communication situations as closely as possible . . . . As soon as students are sufficiently well prepared, they are given opportunity to watch selected films with foreign language sound tracks, and to engage in other activities where linguistic materials can gain meaning in realistic situations and contexts. Justification for these procedures is sought in the psychology of language and in studies of bilingualism, in which it is held that the speaker who has acquired a mastery of a second language does not normally "translate" from his native language into the second

language; instead, his second language verbal responses are direct responses to situations, without the intervention of native-language responses.

In conjunction with the changing methodology, there was realignment of the objectives and goals for language teaching and learning. The following excerpt is indicative of these changing goals (33, p. 6):

The over-all goals in modern foreign language study are effective communication and cultural understanding. The specific goals are:

1. To understand a foreign language when spoken at normal speed on a subject within the range of the student's experience.

2. To speak well enough to communicate directly with a native speaker on a subject within the range of the student's experience.

3. To read with direct understanding, without recourse to English translation, material on a general subject.

4. To write, using authentic patterns of the language.

5. To understand linguistic concepts, such as the nature of language and how it functions through its structural system.

6. To understand, through the foreign language, the contemporary values and behavior patterns of the people whose language is being studied.

7. To acquire knowledge of the significant features of the country or area where the language is spoken (geographic, economic, political, etc.)

8. To develop an understanding of the literary and cultural heritage of the people whose language is studied.

Politzer pointed out that an integral aspect of this change in language teaching has been a new approach in the evaluation and education of foreign language teachers, and he suggested that we must analyze the efficiency of language teaching in terms of observed behavior in the classroom (51, p. 252):

> The primary task of the language teacher, though certainly not
> the only one, is to create language skills in the pupil. . . .
> Thus, it seems possible that in foreign language teaching the
> efficiency of the language teacher -- or at least his efficiency
> as imparter of foreign language skills -- can be measured ob-
> jectively in terms of the achievement of his pupils. And the
> very fact that the most important goal of the language teacher
> is the creation of a new "verbal behavior" on the part of the
> student justifies the hope that the efficiency of his teaching
> may also be analyzed and evaluated in terms of observable,
> behavioral categories.

He has further suggested that there is a need to supplement exist-

ing measures of teacher preparation for teaching languages by examining

the actual performance in the classroom and for the specific applica-

tion of such research approaches as those taken by Flanders (26 and 28)

and Medley and Mitzel (39 and 40).

In a recent article dealing with foreign language teacher education,

Banathy discussed the need for designing a teacher education program be-

ginning with a detailed analysis and description of the on-the-job per-

formance of the foreign language teacher. He took the position that such

a "job" description will become the basis for formulating training ob-

jectives (9, p. 491):

> One of the reasons that the great variations in quality and
> quantity of current foreign language teacher training programs
> is that existing programs are usually based on some vague gener-
> alized goals, rather than on a detailed analysis of the actual
> performance of the teacher.
>
> On the other hand, if we systematically observe what the foreign
> language teacher actually is to do in the foreign language class,
> and if we describe this performance in specific terms, then we
> have a valid line of departure for building a program which will
> eventually lead to the attainment of the kind of performance de-
> sired and described.

In essence, the impact of the A.S.T.P., the results of the Foreign

Language Program of the MLA, and the influence of the National Defense

Education Act -- through its provisions for research, language institutes,
direct funding for language programs in public schools and institutions
of higher education -- have brought a relevance to language teaching
unparalleled in the history of this discipline.

However, an increasing number of educators and others interested
in the teaching of modern foreign languages are calling for a re-
examination of research efforts in language teaching, with the focus of
concern the performance of the teacher in the classroom.

The following section treats research dealing with systematic ob-
servations of teacher and pupil behavior in the classroom setting.

Research on Systematic Observation of Classroom Behavior

The research and literature reviewed in this section deals with ob-
servational techniques and systems utilized to assess the behavior of
teachers and students in the classroom.

Systems of classification have been divided into several categories
by various researchers. Simon and Boyer (53, pp. 1-2) have suggested
two broad categories for this classification: (1) affective systems
which deal with the emotional climate of the classroom by coding how the
teacher reacts to the feelings, ideas, work efforts or actions of the
pupils, and (2) cognitive systems which deal with the thinking process
itself. Openshaw and Cyphert outlined three major categories (46,
p. 8): (1) those dealing with psychological climate or classroom inter-
action; (2) those dealing with attempts to measure classroom behavior

per se, to describe quantitatively what goes on in classrooms; and (3) those dealing with substantive objectives or cognitive aspects of teaching-learning.

This review has been organized in a pattern similar to that suggested by Openshaw and Cyphert, except that the second category has been combined with the first one, with a final section devoted to category systems for foreign language classrooms.

Psychological climate

This dimension of classroom behavior has received more attention than any other aspect of classroom interaction. Openshaw and Cyphert (46, p. 10) indicated that most of these efforts have grown out of a concern for the identification of effective teacher behaviors or the social psychologist's interest in the process of interaction within the classroom.

Studies by Thomas (61) dealing with nursery school children represented a break with the traditional rating scales. In developing a design for this work, the group decided to examine the interactions among individuals through objective, systematic observation, and the standard for excellence in objectivity set by Thomas in these studies guided subsequent research in social behavior.

Anderson and his associates developed twenty-six teacher-behavior categories and twenty-nine children-behavior categories to classify teacher and pupil behaviors. These categories were based on the observation of the dominative and integrative contacts among nursery-school

children.

From preliminary studies Anderson and Brewer found that it was
possible to develop measures of behavior of young children:

Behavior was recorded as "contacts" and divided into two groups
of categories. If a child snatched a toy, struck a playmate, or
commanded him, or if he attempted to force him in some way, such
contacts were included under the term "domination." By such
behavior he ignored the rights of the companion; he tended to
reduce the free interplay of differences and to lead toward re-
sistance or conformity in responding or adapting to another.

Other contacts were recorded which tended to increase the inter-
play of differences. Offering a companion a choice or soliciting
an expression of his desires were gestures of flexibility and
adaptation. These tended in the direction of discovering common
purposes among differences. Such contacts were grouped under
the term "socially integrative behavior" (5, p. 12).

There were two basic concepts which resulted from the studies of
Anderson and his associates: 1) socially integrative behavior in one
person induces socially integrative behavior in others, and 2)
dominative behavior in one person brings on domination and resistance
in others.

These studies conducted over several years provided the following
conclusions:

Integrative behavior in one child induced integrative behavior
in the companion, domination incited domination, integration and
domination were psychologically different.

The data confirmed the hypothesis that integration in the teacher
induces integrative behavior in the child. Moreover, children
with the more dominating teacher showed significantly higher fre-
quencies of nonconforming behavior, directly supporting the
hypothesis that domination incites resistance. The behaviors of
children also supported the further hypothesis that severe domina-
tion produces not resistance but submission and atrophy (8, p. 136).

It was apparent from these studies that the behavior of the teacher sets the psychological climate of the classroom, and this climate will continue in following years with different students.

However, Medley and Mitzel (40, p. 266) pointed out that the small sample of four teachers made it impossible to estimate reliability and to study the internal consistencies of any of the proposed scales.

Lippitt and White were involved in similar studies dealing with three patterns of leadership: democratic leadership, authoritarian leadership, and laissez-faire leadership. Through laboratory experiments with school club activities, they studied the leadership patterns employed by adult leaders in club activities.

Basically, the leadership patterns of Lippitt and White (38) conformed to the definitions of integrative and dominative behavior identified by Anderson. Democratic leadership was similar to integrative behavior, and authoritarian leadership was similar to the dominative contacts. There was no equivalent in Anderson's work for the laissez-faire leadership style; however, this pattern of behavior generally consisted of irregular integrative behavior with an element of indifferent reaction to the group.

In general, the conclusions of Lippitt and White confirmed the work of Anderson and his associates. An interesting conceptualization was the dependency of the group on the leader with an authoritarian style. When the leader would leave the group, it was unable to continue functioning without his direction.

Withall (64) focused on teacher behavior only. He classified the verbal behavior of teachers from five classes into categories for analysis and developed a set of seven categories called the social-emotional index. This index was similar to Anderson's I-D index, or the ratio of the total number of integrative teacher contacts to the total number of dominant contacts.

Following are the seven categories:

1. Learner-supportive statements that have the intent of re-assuring or commending the pupil.

2. Acceptant and clarifying statements having an intent to convey to the pupil the feeling that he was understood and help him elucidate his ideas and feelings.

3. Problem-structuring statements or questions which proffer information or raise questions about the problem in an objective manner with intent to facilitate learner's problem-solving.

4. Neutral statements which comprise polite formalities, ad-ministrative comments, verbatim repetition of something that has already been said. No intent inferable.

5. Directive or hortative statements with intent to have pupil follow a recommended course of action.

6. Reproving or deprecating remarks intended to deter pupil from continued indulgence in present "unacceptable" behavior.

7. Teacher self-supporting remarks intended to sustain or justify the teacher's position or course of action (64, p. 349).

Withall suggested that these seven categories lay along a continuum from "learner-centeredness" to "teacher centeredness." Categories 1, 2, and 3 represented learner-centered behavior and categories 5, 6, and 7 were teacher centered.

He concluded that a sustained pattern of teacher-centeredness produced a disruptive anxiety among pupils which affected their ability to recall previously learned material. The opposite condition obtained in a learner-centered climate.

From this work, several conclusions were drawn concerning teacher-pupil relationships: (1) teacher's verbal expressions of understanding facilitate problem solving, (2) learner dependency on the teacher is undesirable, and (3) free choice for the learner is desirable.

Using Withall's social-emotional index, Flanders (26) studied personal-social anxiety among pupils as a factor in learning. In this experimental situation, two individuals were trained to interact according to Withall's dimensions of learner-centeredness and teacher-centeredness teacher roles, and the pupil's behavioral responses, elicited by the two teacher roles, were recorded at several levels: (1) all verbal statements were recorded, (2) using a concealed lever to indicate positive and negative feelings associated with the achievement task, and (3) the pupil's pulse was recorded during learning and evaluation periods.

The conclusions drawn from this study extended and confirmed Withall's work (26, p. 110): (1) pupil behavior associated with interpersonal anxiety takes priority over behavior oriented toward the achievement problem, (2) teacher behavior characterized as directive, demanding, deprecating by the use of private criteria, and, in general, teacher supporting elicits pupils behaviors of hostility toward self or the teacher,

withdrawal, apathy, aggressiveness, and even emotional disintegration, and (3) teacher behavior characterized as acceptant, problem oriented, evaluative or critical by way of public criteria, and, in general, pupil supportive, elicits pupil behaviors of problem orientation, decreased interpersonal anxiety, integration, and even emotional readjustment.

In a study of psychological climate and its influence on learning in group situations, Perkins (49) also employed Withall's system. This investigation focused on the effects of differences in climate on the group learning of six in-service teacher groups participating in an established program of child study, and Withall's technique for assessing classroom climate was used to describe the climate of each group (49, p. 116).

According to the results of this study, learner-centered groups revealed greater objectivity and warmth in their attitudes toward children, and more child development concepts were evident in learner-centered groups.

In summarizing this study, Perkins concluded:

These findings emphasize conclusively that an individual's learning and development cannot be treated as a series of discrete and unrelated experiences. It is evident that the changes in the learner influence and are affected by the total experience. The part played by teacher-pupil relations is extremely significant, for to a greater extent these relations shape the climate of the classroom. Climate appears to be a key ingredient in interpersonal experience, for it will in a large measure determine the learning and satisfaction of emotional needs of groups, outcomes which provide a realization of some of the broader objectives of education (49, p. 119).

In discussing early studies of classroom interaction, it must be noted that much of this early work was carried out at the University of Chicago by Thelen and his co-workers in the Human Dynamics Laboratory. This research was interdisciplinary and capitalized on several streams of thought: Lewin's field theory; the work of Prescott, Havinghurst, and Tryon in child study and development; Rogers' client-centered therapy; and group dynamics. They attempted to develop a theory of instruction based on constructs from child development, field theory, and psychotherapy. Thelen (60) edited a series of studies in an issue devoted to experimental research in teaching, and among the contributors were Withall, Flanders, and Perkins.

Medley and Mitzel (39) engaged in studies of teacher behavior over a period of years. Their efforts have focused on attempts to determine what patterns of teacher behavior were characteristic of effective teachers.

From their initial designs, they combined Withall's social-emotional index with a modification of the technique developed by Cornell, Lindvall, and Saupe (23). The resultant system was termed OScAR, Observation Schedule and Record, and is a rather reliable measure of global teacher behavior.

The instrument consists of three orthogonal dimensions of behavior: emotional climate, verbal emphasis, and social organization. However, the authors of the system point out one dimension which is absent -- a dimension related to the organization of the content of instruction and the flow of ideas in the classroom (39, p. 90).

Openshaw and Cyphert summarized information relating to OScAR as

follows:

> The OScAR scales were designed for use by a single observer visit-
> ing a classroom by himself. The system enables the observer to
> see, to hear, and to record as much of what is going on in the
> classroom as possible. No weighting or importance is attached
> to the various teacher behaviors as observed, the three dimensions
> measured represent what are probably the most obvious differences
> that can be observed in classes, and the system of categories
> yields measurement of several dimensions of behavior along which
> different teachers can be discriminated successfully (46, p. 23).

The observational system which has had the greatest application to

research in classroom interaction and psychological climate is that de-

veloped by Flanders. This system is concerned with the verbal inter-

actions of teachers and pupils, and this level of interaction is as-

sumed to be an adequate sample of the teacher's total behavior.

> Interaction analysis is concerned primarily with verbal behavior
> because it can be observed with higher reliability than most non-
> verbal behavior. The assumption is made that the verbal behavior
> of the teacher is an adequate sample of his total behavior; that
> is, his verbal statements are consistent with his nonverbal
> gestures, in fact, his total behavior. This assumption seems
> reasonable in terms of our experience (28, p. 19).

The Flanders system consists of ten behavioral categories. Seven

of these categories describe teacher behavior: (1) accepts feeling, (2)

praises or encourages, (3) accepts or uses ideas of students, (4) asks

questions, (5) lecturing, (6) giving directions, or (7) criticizing

or justifying authority. These categories are polarized into direct

or indirect teacher behavior or influence. Flanders has defined these

two patterns of influence in terms of verbal behavior (27, p. 44):

> Direct influence consists of stating the teacher's own opinion
> or ideas, directing the pupil's action, criticizing his behavior,
> or justifying the teacher's authority or use of that authority.

Indirect influence consists of soliciting the opinions or ideas of the pupils, applying or enlarging on the opinions or ideas of the pupils, praising or encouraging the participation of pupils, or clarifying and accepting the feelings of pupils.

Two categories are used to describe pupil behavior: (8) student talk-response, and (9) student talk-initiation. The final category (10) is for silence or confusion. Figure 1 summarized the ten categories.

To describe the pattern of behavior in a classroom, an observer, using the ten categories of interaction, records the category number which best represents the verbal behavior at the end of every three-second period, or sooner if there is a change of behavior. The sequence of numbers is generally written in vertical columns. Flanders has also suggested that the observer make anecdotal notes at appropriate occasions in order to explain more fully the observed classroom behavior.

Once the sequence of events in the classroom has been recorded, the observer enters the tallies in a ten column by ten row matrix. Through this procedure the series of events can be easily examined.

A complete description of this procedure and matrix analysis is available in Amidon and Flanders (3) and Flanders (27).

In general, the results of Flanders' work with interaction analysis support several conclusions: (1) indirect teaching (or influence) stimulates verbal participation by pupils; (2) teachers termed indirect were more flexible and students in these experimental situations achieved more when studying with more flexible teachers; (3) direct teaching (or influence) produces a greater degree of student compliance on the teacher;

Teacher Talk	**Indirect Influence**	1. Accepts Feeling: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included. 2. Praises or Encourages: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying, "um hm?" or "go on" are included. 3. Accepts or Uses Ideas of Student: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5. 4. Asks Questions: asking a question about content or procedure with the intent that a student answer.
	Direct Influence	5. Lecturing: giving facts or opinions about content or procedure, expressing his own ideas, asking rhetorical questions. 6. Giving Directions: directions, commands, or orders to which a student is expected to comply. 7. Criticizing or Justifying Authority: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference
Student Talk		8. Student Talk - Response: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. Student Talk - Initiation: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. Silence or Confusion: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

Figure 1. Categories for interaction analysis

(4) teachers termed direct lack the skills required to accept, to clarify
and to use adequately the ideas of students and consequently give more
direction and offer more criticism; and (5) the direct teachers could
not modify their teaching behavior as much as the indirect teachers (27,
p. 117).

Joyce and Hodges (37, p. 409) carried out a project designed to help
teachers enlarge their repertoire of teaching behaviors, and consequently
become more flexible in their instructional roles. An essential aspect
of this project was training the teachers to code verbal behavior using
an instrument for interaction analysis. The coding system developed for
this utilized four dimensions of teacher behavior each of which was
divided into subcategories. The four major categories were as follows:
(1) sanctions, (2) handling information, (3) procedural communications,
and (4) maintenance communication.

The assumption inherent in this project was that a teacher, once
he could code his behavior in the classroom, could make discriminations
about his teaching. He would then be in a position to analyze his pat-
terns of behavior and determine if his teaching behavior matches his ob-
jectives in teaching (37, p. 411). The ultimate objective of the project
was to provide a methodology for increasing teacher flexibility.

Openshaw and Cyphert (46) developed a taxonomy for the classification
of teacher classroom behavior. They based their early efforts on a
synthesis of related studies, and after developing an initial taxonomy,
it was tested and modified through a series of classroom observation. At

this point, a major validation study was carried out resulting in the

final instrument. The authors concluded (46, p. 149):

> The taxonomy provided a means for the empirical description of
> levels of behavior and furnishes a conceptual screen through
> which teacher behavior may be viewed.

Basic to this taxonomy is the concept that teacher behavior consists

of four major dimensions: (1) a source dimension, (2) a direction di-

mension, (3) a function dimension, and (4) a sign dimension; and all

categories of the taxonomy are subsumed under these four major dimensions.

Teaching in this study, at its global level, was viewed as a process

of interaction among individuals within a superior-subordinate relation-

ship, and the working definitions of the four dimensions were established

within the framework of this process. Figure 2 illustrates the relation-

ship among these dimensions.
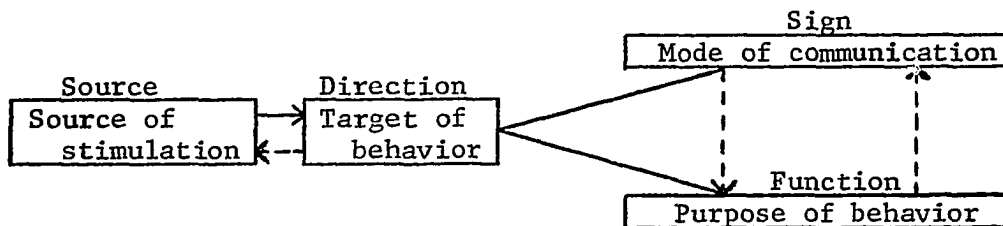
Figure 2. Dimensions of teacher classroom behavior

Parakh (47) in his study of teacher-pupil interactions in high

school biology classes developed a category system for the systematic

observation of lecture-discussion-recitation classes and laboratory

sessions.

This category system consisted of sixteen major categories and twenty-eight sub-categories. Parakh also included a residual category for these interaction activities not classifiable according to his system. There were five major dimensions under which the categories were subsumed: evaluative (affective-cognitive), cognitive, procedural, pupil-talk, and silence.

His findings could be summarized as follows: (1) in lecture classes, the percentage of time devoted to teacher talk was 75 percent, teacher's pedagogically relevant non-verbal behavior 10 percent, and pupil talk 15 percent. The corresponding percentages in laboratory situations were 50 percent, 40 percent, and 10 percent. (2) The distribution of teacher behavior in the relevant dimensions was: cognitive dimension, 55 percent of total time in lectures and 42 percent of total time in the laboratory sessions; procedural dimension, 18 percent of total lecture time and 40 percent in the laboratory; and the evaluative dimensions, 10 percent of total time in lectures and 4 percent in the laboratory. (3) Four quasi-logical operations of teaching were used in the following order, starting with the highest frequency of occurrence, fact stating, explaining, defining and evaluating subject matter (47, pp. 159-161).

These results were consistent with other research utilizing interaction analysis.

Amidon (2) has modified the Flanders system to incorporate recent research by Hughes, Taba, and Gallagher and Aschner in the analysis of teaching. He retained the basic categories while adding sub-categories to permit the collection of more data. The additional categories resulted

in a 24 category system.

This modified category system represented an integration of research in the cognitive aspects of teaching as well as the affective domain represented by the Flanders system.

Categories 2 and 7 from the Flanders system (praises or encourages and criticizing or justifying authority) were modified by employing Hughes' concept relating to public and private criteria for praising or criticizing. Taba's categories of thinking (description, inference, generalization) provided the basis for the modification of category 3 (accepts ideas).

Gallagher and Aschner's system was used to modify category 4 (asks questions) and resulted in the addition of cognitive memory, convergent, divergent, and evaluative questions.

This modified system was a synthesis of the affective and cognitive dimensions of classroom verbal behavior.

From the review of research literature on teaching and the several volumes of the Classroom Interaction Newsletter, it was apparent that the dimension of classroom behavior termed psychological climate, or class-room interaction, has received the greatest attention by researchers. This supports the contention made by Medley and Mitzel in their review of systematic observation as a technique to measure classroom behavior.

Cognitive aspects of teaching

Cognitive systems for the analysis of teaching have been defined by Simon and Boyer (53, p. 2) as those systems dealing with the thinking process itself and the categories generally differentiate between different

kinds of teacher information, teacher questions, or pupil responses.

From this review, it was obvious that there are fewer systems which deal with the cognitive domain, and additionally, they are more complex in their nature. However, Smith has emphasized the necessity of examining the cognitive aspect of the teaching act as well as the affective aspects. His position is that there is an increasing tendency to consider the affective domain of the teaching process more important than the cognitive. He contends that teaching consists not only in ways of relating to pupils but also in ways of dealing with the content of instruction (55, p. 326).

Smith and his associates (57) have been engaged in a comprehensive study devoted to the logical aspects of teaching. The data for the study were gathered through the tape recording of secondary classroom teaching sessions. These classes consisted of four subject-matter areas: English, mathematics, science and social studied; and five consecutive teaching sessions in each of seventeen classrooms were recorded.

The classroom discourse was divided into two units: (1) episode, defined as verbal interaction between two or more individuals and (2) monologue, an individual participation, usually a teacher giving instruction, assignments, or lecturing. Further, an episode was comprised of three components: an opening phase, a continuing phase, and a closing phase.

To develop the categories for the classification of episodes it was decided to classify them by the opening phase. This procedure was

selected as the opening phase consisted of a verbal move termed an

"entry," and it was always self-initiated and followed by a rejoinder.

The categories developed for classifying the logical operations of

teaching were as follows: defining, describing, designating, stating,

reporting, substituting, evaluating, opining, classifying, comparing

and contrasting, conditional inferring, explaining, and directing and

managing the classroom. From an analysis for the teaching sessions, the

most recurring categories in descending order were describing, designating,

explaining, and classroom management.

In an extension of the study on the logical aspects of teaching,

Smith (56) developed a system of classification which focused on pro-

cedural operations within the verbal interaction designed to control the

flow of subject matter. The procedural operations were termed strategies,

and they were concerned with the achievement of specific outcomes of the

teaching process.

In an article dealing with the conceptual analysis of instructional

behavior, Smith traced the process of analyzing the cognitive aspects of

teaching from the logical operations to the logical structures.

> It is possible to identify and describe all sorts of units of
> verbal behavior in the classroom. . . . The first task then
> is to identify the units of verbal discourse which can be
> sorted into different logical categories.
>
> The second task is to classify these units into logical cate-
> gories, each one being coordinate with a logical operation.
> These operations are the means by which the teacher arranges
> and maneuvers the subject matter of instruction as he teaches. . .
> the logical operations are tactical moves on the part of the teacher
> and they take place within larger units of verbal behavior called
> strategies. . . . They consist in large-scale maneuvers by which
> the teacher frames the general direction of student behavior . . .

and consist of ways by which the materials of instruction
are deployed for the purposes of either constricting or
releasing the behavior of the student.
(54, p. 297)

The major coding unit is the venture, which like the episode, con-

sists of interaction between two or more individuals; however, the

venture is more inclusive than the episode. Each venture is classified

by its cognitive objective into one of several categories: causal,

conceptual, evaluative, informatory, interpretive, procedureal, reason,

rule, and system ventures.

Basic to each stragegy were two dimensions: (1) the treatment di-

mension which is concerned with the structuring of information and (2)

the control dimension which deals with techniques employed by the teacher

to guide and control the students' operations on the content.

The work of Smith and his associates on the logic and strategies of

teaching is an important step toward a theory of teaching based on an

analysis of the cognitive aspects of classroom verbal behavior.

The Wright-Proctor system (66) was designed for the analysis of

verbal interaction in mathematics classrooms.

They conducted a major validation study to verify the potential of

the system to describe classroom interaction. This project involved

twelve classes with a time-sampling of 45-minute observation periods

divided into fifteen-second intervals. The individual recording be-

havior observed for fifteen seconds, wrote for fifteen seconds, observed

for fifteen seconds, and so forth.

The instrument for classifying classroom interaction provided three

major categories: content (mathematical), process, and attitude. Each of these three major categories was divided into several sub-categories which require control of mathematical concepts for proper utilization.

Bellack and his associates (12) developed a research project whose purpose was to examine the teaching process through an analysis of the linguistic behavior of teachers and pupils. They initiated the project with the assumption that the primary function of language is the communication of meaning and that describing linguistic events in the classroom in terms of the meanings expressed is a necessary direction for research in teaching (12, p. 2).

The subjects were fifteen teachers of Problems of Democracy classes studying a unit on international trade. The fifteen classes were recorded four times on four successive days during the regular school schedule, and the transcriptions of these recordings served as the basic data for the analysis of verbal interaction (12, pp. 1-2).

From the analysis, four categories of pedagogical moves were identified:

> Structuring. Structuring moves serve the pedagogical function of setting the context for subsequent behavior by launching or halting-excluding interaction between pupils and teachers and by indicating the nature of the interaction. For example, teachers frequently begin a class period with a structuring move in which they focus attention on the topic or problem to be discussed during that session.

> Soliciting. Moves in this category are designed to elicit a verbal response, encourage persons addressed to attend to something, or elicit a physical response. All questions are solicitations, as are commands, imperatives and requests.

Responding. These moves bear a reciprocal relationship to solicit-
ing moves and occur only in relation to them. Their pedagogical
function is to fulfill the expectation of soliciting moves. Thus,
student's answers to teacher's questions are classified as re-
sponding moves.

Reacting. These moves are occasioned by a structuring, soliciting,
responding, or another reacting move, but are not directly elicited
by them. Pedagogically, these moves serve to modify (by clarifying,
synthesizing or expanding) and/or to rate (positively or negatively)
what has been said previously. Reacting moves differ from respond-
ing moves, in that while a responding move is always directly
elicited by a solicitation, preceding moves serve only as the oc-
casion for reactions. Rating by a teacher of a student's response,
for example, is designated a reacting move.

As we proceeded with the analysis of the data in terms of pedagogical
moves, it became evident that these moves occur in certain cyclical
patterns or combinations which we designated teaching cycles. A
teaching cycle begins either with a structuring move or with a
soliciting move, both of which are initiating maneuvers; that is
they serve the function of getting a cycle underway. In contrast,
responding and reacting moves are reflexive in nature; a respond-
ing move is elicited by a soliciting move and a reacting move is
occasioned by a preceding responding move.

Since Bellack and his associates based much of their theoretical

framework on Wittgenstein's concept of "language games," in which there

are definite structures and moves that a player completes as he partici-

pates in the game, the linguistic behavior of teachers and pupils in the

classroom was guided by specific rules.

The classroom game involves one person called a teacher and one or
more persons called pupils. The object of the game in the class-
rooms observed is to carry on a discourse about subject matter, and
the final payoff of the game is measured in terms of the amount of
learning displayed by the pupils after a given period of play. In
playing the game, the players follow a set of complementary rules.
If one plays the role of teacher in this game, he follows a some-
what different set of rules. Some deviations from these rules are
permitted, and the subsequent pattern characterizes the player's in-
dividual style of play. These deviations, however, are relatively
minor in comparison with the general system of expectations. In
fact, the basic rule is that if one is to play the game at all, he
will consistently follow the rules specified for this role (12,
p. 173).

Finally, there were certain general rules which guided the behavior of the teacher and the pupils in the classroom:

1. The basic verbal maneuvers that the teacher and the pupil make in playing the game are pedagogical moves: structuring and soliciting, which are initiatory moves; and responding and reacting, which are reflexive moves.

2. The teacher is the most active player in the game. He makes the most moves; he speaks most frequently; and his speeches usually are the longest.

3. Players generally use the empirical mode of thought (fact stating and explaining) in dealing with the substantive material under discussion. The analytic mode (defining terms and interpreting statements) is used much less frequently. The frequency of evaluative statements (opining and justifying) is also relatively low in comparison to empirical statements; that is, expressions of personal opinion . . . to justify opinions appear rather infrequently.

In a later report by Bellack these observations were summarized.

1. The teacher-pupil ratio of activity in terms of lines of typescript is approximately 3 to 1; in terms of (pedagogical) moves this ratio is about 3 to 2. Therefore . . . teachers are considerably more active in amount of verbal activity.

2. The pedagogical roles of the classroom are clearly delineated for teachers and pupils. Teachers are responsible for structuring the lesson, soliciting responses. The pupil's primary task is to respond to teacher's solicitations . . . .

3. In most classes structuring accounts for about ten percent of the lines spoken; soliciting, responding, and reacting each account for between twenty and thirty percent of the lines . . . . Teachers vary somewhat from this pattern, but the distribution of variations is fairly restricted with most teachers clustering within a few percentage points of each other for any given category of analysis. Moreover, teachers tend to be remarkably stable over class sessions . . . .

4. The basic verbal interchange in the classroom is the solicitation-response . . . . Classes . . . differ in the rate at which verbal interchanges take place. The average rate is slightly less than two cycles per minute . . . .

5. By far the largest proportion of the discourse involved empirical (i.e., factual) meanings . . . . Most of the . . .

unit was devoted to stating facts and explaining principles
. . . while considerably less of the discourse was concerned
either defining terms or with expressing and justifying
opinions . . . . (13, pp. 84-88).

Taba (59) studied the development of the cognitive processes in
elementary school children. A unique aspect of this study was that
they assessed the role of a specifically designed curriculum and a
program of teacher education in the development of the thinking process.

Basic data were derived from an analysis of tapescripts of twenty-
four upper elementary grades. Four classroom discussions at different
points in the school year were recorded. These discussions were focused
on three cognitive tasks: (1) concept formation, involving grouping
and classification, (2) inferring and generalizing from data, and (3)
application of principles (59, p. 70).

The coding scheme employed in this study was designed to provide
the following information:

1. Code teacher behavior in terms of its pedagogical functions
    vis-a-vis the development of cognitive processes of the
    students, describing both the individual acts and relevant
    patterns of acts or strategies;

2. Categorize student's responses in a matter that: a) described
    the nature of the cognitive operations; b) yielded a direct
    measure of the quality or level of these operations; and c)
    described the degree of the complexity and abstractness.

3. Assess the nature of the interaction between these (59, p. 72).

The results of this study confirmed the basic hypothesis that stu-
dents, given a curriculum designed to develop their cognitive potential
and theoretical insights and taught by strategies specifically addressed
to help them master crucial cognitive skills, would master sophisticated

forms of symbolic thought earlier (59, p. 221).

Additionally, the experimental group exhibited the ability to produce more abstract and complex inferences and tended to engage in logically related sequences of thought.

An important result of Taba's work was the impact of specific teaching strategies on the development of cognitive skills. It appeared that the level of pupil attainment in the cognitive processes was determined by the pattern of teacher behavior.

Gallagher (31), in a project designed to identify productive thought processes of gifted children, utilized a complex system to codify verbal interactions.

The project sought to examine the following problems: (1) to identify productive thought processes in intellectually gifted children within the context of classroom verbal activity at the junior high school level, and (2) to assess relationships between these thought processes and certain variables that may relate to their operation in the classroom (31, p. 11).

The subjects were academically talented students at the junior high school level enrolled in social studies, science and English classes. A total of ten classes were tape recorded for five consecutive sessions. The Aschner-Gallagher system employed in this project consists of five major categories: (1) cognitive memory, (2) convergent thinking, (3) evaluative thinking, (4) divergent thinking, (5) routine, and 47 subcategories. Four of the categories relate to verbal interactions dealing

with the type of thought processes exhibited by such behavior.

The fifth category, routine, takes in the typical give-and-take between teacher and pupils and managerial and procedural operations necessary to the functioning of the classroom.

In general, the results of this project could be summarized as follows:

1. The greatest proportion of teacher responses and questions fell in the Cognitive-Memory category. The second most utilized category was that of Convergent Thinking. It would appear that almost all classroom discussions, regardless of individual teacher style, would have a substantial proportion of Cognitive Memory and Convergent Thinking as necessary components of classroom performance.

2. An extremely close relationship was obtained between type of teacher questions and type of student responses. Except for some idiosyncratic responses on the part of a few students, it was clear that the character and style of verbal behavior in the classroom was mainly directed by the teacher.

3. Meaningful differences were observed between teachers in terms of the types of questions asked and the types of statements made. Questions and answers appeared to serve different purposes for the teacher. The questions determined the type and kind of response requested from the student and was used by the teacher to advance curriculum goals. The teacher statements represented a particular individual style of presentation of information.

4. Notwithstanding the important influence on student production by the teacher, a consistent pattern of expressiveness or nonexpressiveness was discovered among these gifted students. Despite changes in content area and teachers, positive relationships were obtained on expressiveness from the same students, observed in different classrooms, or at different times in the same classroom.

5. Expected differences between students on performance in the major categories of Divergent Thinking, Convergent Thinking, etc., did not occur. A student who performed well in one category tended to be superior in them all.

6. Teachers have distinctive styles that can be identified and which may vary significantly from one class group to another. It was also determined that teachers can vary in the proportion of different thought processes they request from one group, and even from one class session, to another (30, pp. 139-140).

In general, the conclusions drawn from this study confirmed the results of Bellack and his associates (12) in their study of language in the classroom. From the results of this project, it appeared that teachers initiated and determined the thought processes verbalized. Again the role of questioning dominated the teaching process.

One major drawback to the Aschner-Gallagher system is its complexity; however, this is a basic characteristic of the several cognitive systems reviewed. As Simon and Boyer pointed out, such systems deal with verbal behavior on two levels: first, they identify categories of verbal behavior (giving information, asking questions, clarifying, and defining) and secondly, they attempt to analyze the structure of the thought processes themselves (53, p. 7).

Systematic observation in foreign language teaching

A review of the major studies conducted in the teaching of modern foreign languages reveals a lack of effort to apply systems for analyzing classroom interaction in either the affective or cognitive domains. Most significant studies have focused on a contrast of teaching methods, that is, the traditional grammar-translation method versus the oral-aural method and/or a combination of both.

Agard and Dunkel (1), Scherer and Wertheimer (52), and Smith and Berger (58) have conducted major studies along these lines. The basic

rationale for these studies is clearly seen in the following statements:

The fundamental issue of grammar-translation versus audio-lingualism as an approach to the teaching of a new language is probably as old as language teaching itself (51, p. 1).

On the one hand, there is the historically older, and more widely practiced approach to foreign language instruction known as "grammar-translation" or "traditional." In opposition to this there is developing increasingly wide support for the "audio-lingual" or "functional skills" approach, the origins of which extend as far back as the seventeenth century. Currently, it is receiving its greatest support from findings in linguistic science. The proponents of these two schools are in disagreement on basic assumptions regarding the nature of language learning and different priorities in selecting foreign language objectives. Each advances a distinct set of methods designed to achieve the terminal language behaviors each deems most important (58, pp. 2-3).

In each of these studies, as well as others of this nature, there was an attempt to control teacher behavior so that each would exhibit the performance criteria inherent in the teaching method under study. The study by Smith and Berger (58) provided the most elaborate attempt to control teacher behavior through pre-experimental workshops; text materials which clearly differentiated between the two teaching methods (traditional and audiolingual) and which inhibited teachers from deviating from the designated approach; instructional guides; and field consultants who visited, observed, and rated teacher performance and adherence to the specific teaching strategy assigned to the teacher.

However, as previously mentioned, absent from these studies was any attempt to examine the teaching act per se or the interaction of teachers and pupils for their affect on pupil achievement in the foreign language. This conclusion supports the position taken by Moskowitz (43) and others (9, 10, 31, 51) that the foreign language classroom has not profited from

research through systematic observation of teacher and pupil behavior.

Four observational systems for categorizing verbal interaction in foreign language classrooms have been identified by this investigator. One system derives from the psychology of second language learning, and the other three are modifications of the Flanders' system.

Jarvis (36, p. 335) developed an observational system for classifying behaviors in terms of language skill acquisition consequences of the behaviors. This instrument was derived from the psychology of second language learning and from experimental knowledge of how these theoretical considerations are actualized in today's foreign language classroom. He postulated that in any system of behavior classification there is a prior determination of a teaching model. The categories represent judgments about which aspects of behavior are to be observed and which are to be ignored. His model presumed that language acquisition means student development in each of the foreign language skills: listening, speaking, reading, and writing; and his instrument is intended for use only in language skill acquisition activities.

His model assumes that in the acquisition of such skills the student must proceed to the stages of "encountering (hearing or seeing) elements of the language, imitating them, manipulating them, and finally using them in innovative real communication language." This model assumes that teaching effectiveness is inherent in the teacher's choice of behaviors and their frequency of use (36, p. 336).

Figure 3 provides the table of behavioral categories for this instrument. Real language categories are those in which language is used

TEACHER   STUDENT

TARGET LANGUAGE

	A. Evoking student response	1. Evoking response
	B. Evoked by student	2. Responding
	C. Classroom management	
REAL	D. Facilitating performance or reinforcing behavior	
	E. Information explanation	

	G. Evoking stimulus	3. Individual response
DRILL	H. Repetition reinforcement	4. Choral response
	J. Prompting	
	P. Modeling or correcting	

READING	W. Presenting written language	5. Writing
AND		6. Reading silently
WRITING		7. Reading aloud

ENGLISH

	K. About target structure or sound system	8. Question about target
	M. About meaning	9. Answer about target
	N. Management	

+ Silence or English not in the above categories but which seem to facilitate learning

- Silence or English not in the above categories but which seems to impede learning

Figure 3.   System for coding classroom foreign language skill acquisition activities

for communication, and drill categories relate to verbal activities designed to produce an over-learning of structural patterns, phonemic contrasts, etc.

Nearhoof (45) devised ten interaction categories which include all major verbal activities commonly occurring in the foreign language classroom. In this project language teachers recorded classroom activities on audio tape and these activities served as the basis for establishing and refining the interaction categories. Although these categories will provide a description of the observed behaviors in the foreign language classroom, it does not respond to the analysis of direct or indirect teaching basic to the Flanders concept of classroom climate. Rather, this system was designed to examine the opportunities for communicative use of the foreign language in the classroom situation. It attempted to differentiate between those language activities which were basically for the reinforcement or clarification of student use of the language, student use of the foreign language in drill situations and that use of the language by the teacher and the students which could be classified truly as communication in the foreign language. Figure 4 represents these categories.

Moskowitz (44) has adopted Flanders' basic system of interaction analysis to the foreign language classroom and has termed it the FLint system (Foreign Language interaction system).

> The Foreign Language interaction system (FLint) is an embellishment of the Flanders system and was designed to analyze foreign language teaching. The following are additional categories included in FLint: (a) the teacher--jokes, repeats student ideas verbatim, corrects without criticism, directs a pattern drill,

TEACHER VERBAL BEHAVIOR	Teacher use of foreign language	1.	Teacher use of the foreign language for communication
		2.	Teacher use of the foreign language for reinforcement
		3.	Teacher uses English to clarify meaning(s) or provide a cue.
	Teacher use of English	4.	Teacher uses English as the functional classroom language. (This includes the use of English by the teacher for the items of communication and reinforcement)
STUDENT VERBAL BEHAVIOR	Student use of foreign language	5.	Student uses foreign language for rote responses.
		6.	Student uses foreign language to recombine prelearned materials.
		7.	Student uses the foreign language to ask a question which he has originated.
		8.	Student uses the foreign language spontaneously.
	Student use of English	9.	Student uses English for class-room communication
		10.	Noninteraction activities (e.g. silence; confusion; organization; other language activities such as language laboratory, singing, silent reading, etc.)

Figure 4. Foreign language classroom interaction system

criticizes student behavior, and criticizes student responses;
(b) silence; (c) confusion divided into two types: (1) enthusiastic--
eager to participate, and (2) out of order; (d) laughter; and
(e) English. All teacher and pupil behaviors are assumed to be
spoken in the language unless an "e" for English is coded after
the category number. This means that the teacher can determine
the ratio of English to foreign language statements made by both
himself and the students. He can also note which behaviors were
used whenever someone reverted to the native language.

In addition to the I/D ratios calculated with the Flanders system,
there are Foreign Language I/D ratios, English I/D ratios, and F/E
ratios (the ratio of foreign language to English) for the total
lesson, the teacher, and the students (43, p. 230).

This category system is used in a manner similar to the Flanders

system but with specific categories for those behaviors common to the

foreign language classroom. It has been the basis for research with

preservice and inservice foreign language teachers. Figure 5 on the

following pages gives a description of this system.

Wragg (65) modified the Flanders system in order to collect data

on interaction carried out in the native language and in the foreign

language. He included a second set of ten numbers (11-20) to represent

the ten Flanders categories when these same observational events occurred

in the foreign language.

This twenty category system was used to collect data on ten post-

graduate student teachers during a twenty minute teaching session. From

an analysis of the data, Wragg noted that 82 percent of the lessons con-

sisted of talk, and 59 percent of the talk recorded was in the foreign

language. Almost all pupil responses in the foreign language were in

reply to the teacher's questions or commands (65, p. 118).

These four observational systems appeared to be the only efforts to

develop or modify a system for the analysis of teacher-pupil interaction.

		1.	ACCEPTS FEELINGS: In a non-threatening way, accepting, discussing, referring to, or communicating understanding of past, present, or future feelings of students.

INDIRECT
INFLUENCE

2. PRAISES OR ENCOURAGES: Praising, complimenting, telling students why what they have said or done is valued. Encouraging students to continue, trying to give them confidence in themselves.

2a. JOKES: Intentionally joking, kidding, making puns, attempting to be humorous, providing the joking is not at anyone's expense. Unintentional humor is not included in this category.

3. USES IDEAS OF STUDENTS: Accepting, clarifying, using, interpreting the ideas of students. The ideas must be rephrased by the teacher but still recognized as being student contributions.

3a. USES IDEAS OF STUDENTS VERBATIM: Repeating the exact words of students after they participate.

4. ASKS QUESTIONS: Asking questions to which an answer is anticipated. Rhetorical questions are <u>not</u> included in this category.

TEACHER
TALK

5. GIVES INFORMATION: Giving information, facts, own opinion or ideas, lecturing, stating procedures, or asking rhetorical questions.

5a. CORRECTS WITHOUT REJECTION: Telling students who have made a mistake the correct response without using words or intonations which communicate criticism.

6. GIVES DIRECTIONS: Giving directions, requests, or commands which students are expected to follow.

DIRECT
INFLUENCE

6a. DIRECTS PATTERN DRILLS: Giving statements which students are expected to repeat exactly, to make substitutions in (substitution drills), or to change from one form to another (transformation drills).

7. CRITICIZES STUDENT BEHAVIOR: Rejecting the behavior of students; trying to change the non-acceptable behavior; communicating anger, displeasure, annoyance, rejection.

7a. CRITICIZES STUDENT RESPONSE: Telling the student his response is not correct or acceptable and communicating by words or intonations, criticisms, displeasure, annoyance, rejection

Figure 5. Foreign Language interaction analysis system

8. STUDENT RESPONSE, RESTRICTED: Responding to the teacher within a narrow and limited range of available or previously shaped answers. Reading aloud by individuals.

8a. STUDENT RESPONSE, CHORAL

STUDENT
TALK

9. STUDENT RESPONSE, UNRESTRICTED OR STUDENT INITIATED: Responding to the teacher with students' own ideas, opinions, reactions, feelings. Giving one from among many possible answers which have been previously shaped but from which students must now make a selection. Initiating the participation.

10. SILENCE: Pauses in the interaction. Periods of quiet during which there is no verbal interaction.

10a. AUDIOVISUAL AID: Silence during which information is communicated by an audiovisual aid or equipment.

11. CONFUSION--ENTHUSIASTIC: More than one person at a time talking, so the interaction cannot be recorded. Students calling out excitedly, eager to participate or respond.

11a. CONFUSION--DISORDERLY: More than one person at a time talking, so the interaction cannot be recorded. Students out-of-order, not behaving as the teacher wishes.

12. LAUGHTER: Laughing, giggling by the class individuals, and/or the teacher.

E. USES ENGLISH: Use of English (the native language) by the teacher or the students. This category is always combined with one of the 14 categories from 1 to 9.

NV. NONVERBAL: Nonverbal gestures, expressions, by the teacher or the student which communicate without the use of words. This category is always combined with one of the categories of teacher or pupil behavior.

Figure 5. (Continued)

Summary

As previously discussed, there is probably no more obvious approach
to research on teaching than through the analysis of the teaching act
itself. The review of research literature on teaching leads to the con-
clusion that there are available category systems for recording and
examining selected aspects of teacher and pupil behavior in the class-
room setting. These category systems are being continually modified and
refined as they are utilized in more research projects, and new category
systems are being developed to quantify and to analyze elements of
classroom behavior.

The psychological climate has been that dimension of classroom be-
havior which has been subjected to more analysis in recent years. However,
more attention is being given to the cognitive aspects of classroom inter-
action as well as research on nonverbal communication.

Research utilizing category systems has been done in grades ranging
from elementary to undergraduate college level classes and in almost
every subject matter area. These systems have been used in preservice
and inservice teacher education as well as with supervisors, school ad-
ministrators and teacher educators.

Observational systems have been increasingly used in the preservice
programs for teacher preparation. Students have the opportunity to role-
play teaching situations and to employ observational systems to examine
patterns of teaching behavior, the development of cognitive skills, and
levels of nonverbal communication. Through such feedback, they are
better able to practice controlling their own behavior and teaching skills.

In essence, the results of research on teaching appear to indicate
that teacher behavior, on several levels, can be more reliably observed
and objectively recorded for analysis. This is a basic step toward the
necessary knowledge of teaching behavior requisite for an effective pro-
gram for teacher preparation.

It is the opinion of this reviewer that studies on teacher behavior
in the classroom setting will increase in the next few years, and
content-free behavioral systems will play a greater role in teacher
preparation and the eventual certification of school personnel in all
areas.

However, as indicated in the review of literature, the use of such
observational systems for analysis of the foreign language classroom
has been very limited; and those efforts carried out thus far have
focused on the psychological climate rather than on the cognitive aspects
of classroom interaction.

METHOD OF PROCEDURE

The primary purpose of this study was to quantify teacher-pupil interactions in the foreign language classroom and to analyze the patterns of teacher and pupil verbal behavior. This chapter describes the methodology employed to gather and to analyze the data for the study, and it has been divided into the following sections:

1. Methodological considerations

2. Selection of the population

3. Selection and description of the instrument

4. Collection of the data

5. Treatment of the data

Methodological Consideration

A review of research on classroom interaction reported in the Classroom Interaction Newsletter (15, 16, 17, 18, 19, 20, 21, 22) failed to reveal a consistent pattern for sample size and frequency of observation in similar studies. Anderson and Brewer's study (5) utilized four teachers while Bellack's study of language in the classroom involved fifteen teachers. Parakh (47), in developing a system for analyzing the interactions of teachers and pupils in biology classes and laboratories, observed a sample of ten teachers once a week for four successive weeks in order to record and to categorize lecture classes and laboratory classes.

Jarvis (36) developed an observational system for classroom foreign

language skill acquisition activities. In this study, fourteen graduate teaching assistants in French at Purdue University were observed for two class hours.

Consequently, it was decided that an acceptable pattern would be one established in a study with a subject matter base, that is the study conducted by Parakh (47); four observations of each teacher during a four-week period, with the sample size set at no less than ten teachers.

Selection of the Population

Since the study involved third-year French, and since there is limited enrollment at this level of French, it was necessary to contact a larger population of French teachers. As a preliminary approach, contact was made with state education agencies in the three-state area of Iowa, Minnesota, and Wisconsin. Through the cooperation of the foreign language consultants in Minnesota and Wisconsin, the list of French teachers for 1967-1968 academic year was obtained. In Iowa this information was secured through the Division of Data Processing in the Iowa Department of Public Instruction.

From this list of schools and teachers, a sample of one hundred fifty teachers was selected. Each teacher selected was sent a letter detailing the scope and purpose of the study (Appendix A). In addition, each teacher received a personal data sheet (Appendix B) with a return, self-addressed stamped envelope. Teachers interested in volunteering for the study were asked to return the personal data sheet, and these

teachers constituted the sample for the study. A total of 24 teachers
indicated positive interest in participating in the study. Each teacher
was sent a magnetic recording tape with instruction for recording the
teaching sessions (Appendix C), and 54 usable teaching sessions were
provided by 14 teachers.

Selected characteristics of these teachers are presented in
Appendix D.

Selection and Description of the Instrument

From the review of literature, it was determined that only four
category systems were specifically developed or modified for use in
the foreign language classroom. Moskowitz (43), Jarvis (36), Nearhoof
(45), and Wragg (65) developed instruments designed to categorize teacher-
pupil interactions in the foreign language classroom. However, the
Moskowitz instrument, FLint (Foreign Language interaction analysis system)
retains the uniqueness of the Flanders system for analysis of direct
and indirect teacher influence, and for the development of the various
ratios calculated with the Flanders system. In addition, the FLint
system provides a means for determining foreign language ratios, English
ratios, and foreign language to English ratios. Additionally, Moskowitz
has reported a reliability coefficient for the FLint system of .85 and
has recommended observation periods of 20 to 30 minutes in length (44).
Therefore, this was the instrument employed in this study, with the
following modifications: Categories 10, Silence; 11, Confusion-
Enthusiastic; 11a, Confusion-Disorderly; 12, Laughter; were grouped in

one category termed noninteraction activities which is in line with the procedures developed by Flanders.

For the purposes of coding interactions, the categories were numbered sequentially from 1 through 16, with 0 being used for the category, noninteraction activity (silence-confusion).

An outline of the modified FLint system utilized in the study is presented in Figure 6. A more complete presentation of each category is presented in Appendix E.

TEACHER TALK	Indirect influence	1. Accepts feeling
		2. Praises or encourages
		3. Jokes
		4. Uses ideas of students
		5. Uses ideas of students verbatim
		6. Asks questions
	Direct influence	7. Gives information
		8. Corrects without rejection
		9. Gives direction
		10. Direct pattern drill
		11. Criticizes student behavior
		12. Criticizes student responses
PUPIL TALK		13. Student responses, restricted
		14. Student responses, choral
		15. Student responses, unrestricted or student initiated
	Noninteraction	16. Audiovisual aids
		0. Noninteraction activities

Figure 6. Modified Foreign Language interaction analysis system

Collection of the Data

The data were collected by magnetic recording tape. Each teacher was asked to record the necessary teaching sessions and return the tapes by mail.

This technique is not completely unique. In the Minnesota Laboratory Five-State Mathematics Study, this technique was employed for certain phases of the study, and this investigator collected data for the development of the category system discussed in the review of literature.

Once the magnetic recording tapes for each teacher had been received, the process of coding teacher-pupil interaction was initiated.

The observer recorded a category number which described the observed verbal interaction between teacher and pupils or between pupils. A category number representing one of the 17 categories of interaction was recorded every three seconds or with each change of activity, whichever occurred sooner. However, often during rapid question-answer sessions or drill activities, more than one notation was required during the three-second interval.

At the end of each teaching session, the record consisted of approximately 600 sequential tallies.

Treatment of the Data

The data resulting from the analysis consisted of columns of category numbers representing the sequences of verbal interaction, and Flanders, in his research, developed a method for recording the sequence

of events in such a way that the generalized pattern of teacher-pupil interaction could be examined. This method consisted of entering the series of category numbers, as overlapping pairs, in a matrix. Since there were 17 categories in the modified FLint system, a 17 by 17 matrix was prepared for each teacher.

Below is a generated sequence of interaction categories, here presented horizontally, for discussion purposes.

0 7 7 7 7 7 6 6 13 13 13 8 13 13 2 7 7 7 7 7 0

(0-7) (7-7) (7-7) (7-7) (7-7) (7-6) (6-6) (6-13) (13-13) (13-13) (13-8)

(8-13) (13-13) (13-2) (2-7) (7-7) (7-7) (7-7) (7-7) (7-0)

The category numbers were treated as overlapping pairs with the first number serving as the row designation in the matrix and the second the column designation for the matrix. The second number of the pair then became the first item of the second pair, and this process was followed sequentially until all possible pairs were utilized. The category number 0 was the initial and terminal category number as it was assumed that each period of observation began and ended with silence.

The sequence of category numbers for each teacher was entered in a 17 by 17 matrix; then the cell tallies for each teacher were entered in an overall matrix which served as the basic item for the analysis of teacher-pupil interaction.

A percentage was determined for each cell in the overall matrix as well as for each cell in the individual teacher matrices. The percentage for each category of interaction was also determined.

The I/D ratio and the revised i/d ratio were calculated for each teacher as well as for the overall teaching sessions, and this was also done for those periods of time when the teachers used either French or English. Additionally, teacher and pupil F/E ratios were calculated as well as the percentage of teacher talk and pupil talk.

Tables appropriate for the exhibition and discussion of these findings are presented in the findings chapter.

FINDINGS

The systematic analysis of classroom verbal interaction has been
organized and presented in many ways by different authors. To facili-
tate the presentation of the findings from this examination, this chap-
ter was divided into two sections: The first section dealt with an
examination of the interaction matrix; the second section dealt with
the basic features of teacher-pupil interaction in the classroom, and
with an elaboration of these findings guided by the five questions posed
in conjunction with the statement of the problem which were as follows:

1. Are language teachers direct or indirect in their teaching?

2. What are the dominant forms of teacher-verbal behavior?

3. What are the dominant forms of pupil-verbal behavior?

4. To what extent do pupils exhibit spontaneous use of the
    foreign language?

5. What is the pattern of English usage?

In order to assist in the interpretation of the tables and figures
presented, an abbreviated description of each category of interaction
is herewith provided: category 1--teacher accepts pupil's feelings;
category 2--teacher praises or encourages pupil; category 3--teacher
jokes with pupils; category 4--teacher uses the ideas of pupils;
category 5--teacher uses ideas of pupils verbatim; category 6--teacher
asks questions; category 7--teacher gives information; category 8--
teacher corrects pupils without rejection; category 9--teacher gives
direction; category 10--teacher directs pattern drill; category 11--

teacher criticizes pupil behavior; category 12--teacher criticizes

pupil responses; category 13--pupil's responses, restricted; category 14--

pupil responses, choral; category 15--pupil responses, unrestricted or

pupil initiated; category 16--use of audio-visual aids; category 17--

noninteraction activities (silence, confusion, dictation, pupils read-

ing silently).

In the modified FLint system, categories 1-12 are identified as

teacher-talk, and categories 12-15 are identified as pupil-talk.

Examination of the Interaction Matrix

The overall matrix (Figure 7) provided a convenient method for sum-

marizing teacher-pupil verbal behavior and was a convenient device for

analysis of this interaction. Through an examination of the matrix, one

is able to identify cells which have moderate or heavy occurrence of

tallies as well as those cells in which there were no tallies.

A detailed discussion of matrix analysis is found in Flanders (27)

and Amidon and Flanders (4). As previously discussed in the section

on methods of procedure, the observational record consisted of a series

of category numbers written every three seconds, and all entries in the

matrix consisted of a series of overlapping pairs of these category num-

bers. A number was entered in the matrix at the intersection of the

appropriate category row and column designation. The numbers of the

pair provided the sequence for entry in the matrix (the first number

was the row designation, and the second number was the column designa-

tion. The second number then became the first item of the second pair,

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2			42	58	179	341	14	93	48			58		20		30
3		2														9
4	14		51		33	58		21	1			12		16		6
5	64	1	1	13	135	109		29	29	2	1	28	17	9		22
6	2			4	326	49	2	38			1	915	10	397		286
7	6	5		4	625	7711	17	253	93	5		498	8	474	10	571
8	10	1	3	7	38	60	49	19	3			856	17	31		17
9				1	8	38		57	11			509	10	68	2	110
10	1					2	1	3	21			200	656			8
11						6		1	1	11		6		2		3
12					5	4	1	1			2	4		2		
13	555		71	314	348	604	787	169	152	5	12	3713	127	126	15	285
14	45			9	31	86	17	22	508	3	1	114	40	2	33	13
15	173	2	42	45	129	593	201	20		3	2	2		1404		125
16						6						21	37		1031	11
17	13		2	5	173	613	22	88	25	1		347	2	190	15	2165
N =	883	11	212	460	2030	10280	1111	814	892	30	19	7283	924	2741	1106	3661

Total 32457

Figure 7. Overall matrix (Category number 1 was eliminated as there were no observations in this category)

and this process was followed sequentially with all numbers).

Each cell in the matrix represented a temporal sequence of a pair of behavioral events. The first class of cells were those identified as steady-state cells as shown in Figure 8. Within these cells verbal behavior persisted for more than the three-second time frame. For instance, a tally in the 7-7 cell (intersection of row 7 with column 7) indicated that the teacher was giving information during a period of more than three seconds. The steady-state cells can be found along the diagonal in the matrix, and in Figure 8 the percentage of interaction within each of the steady-state cells of the 17 by 17 matrix was plotted. These were the only cells in the entire matrix which identify continuous talk in a single category. According to Amidon and Flanders (4, p. 36), heavy loading in diagonal categories 1-12 indicate that the teacher is being deliberate in communication, taking time to extend his or the students' ideas. Above average or heavy loading in the 13, 14, 15 diagonal cells indicate that individual pupils are being permitted to expand their own ideas. In reviewing Figure 7, it was clearly indicated that the most heavily loaded diagonal cells were cell 7-7, teacher gives information, and cell 13-13, pupil response, restricted.

The cells which represented movement from category to category are termed transitional or transactional cells. These cells have unlike row and column designations and indicate a shift or a transition from one category of behavior to another. A greater conceptualization of the teaching act was possible through an analysis of the transitional cells. Each transition related to an event in which two distinct

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00															
3		0.00														
4			0.15													
5				0.04												
6					1.00											
7						23.7										
8							0.15									
9								0.17								
10									0.06							
11										0.03						
12											0.00					
13												11.4				
14													0.12			
15														4.32		
16															3.17	
17																6.67

Figure 8. Steady-state cells

behaviors occurred in some relationship to each other. A transition
may have been constituted by several teacher behaviors, a teacher and
a pupil's behavior or two pupils interacting with each other. A fur-
ther elaboration of the importance of the transactional events within
the classroom are presented later in this section.

The sequence of interaction, therefore, can be read by looking at
the row-column intersection within a particular cell. For example,
the intersection of row 6 and column 13 (cell 6-13) was the sequence
of teacher asked a question--pupil answered, in a restricted manner; the
cell 13-8 was the sequence of pupil answered question--teacher corrected
pupil without rejection. Therefore, one should read the row designation
first and the column designation next in order to interpret the sequence
of interaction.

The rows and columns within the matrix can be treated as units for
the purpose of analyzing blocks of interaction. Figure 9 is a composite
of several blocks or areas of interaction within the matrix. The content
area or "content cross" which represented teacher statements consisting
predominately of teacher questions, of teacher giving information, or
teacher correcting pupil responses without rejection, constituted 50.1
percent of the interaction. The concentration of observational records
in this area indicated the degree to which emphasis was placed on content.

Area A represented a block of cells indicating continued use of
acceptance, praise, encouragement, or reinforcement, and transitions
among these categories while the teacher was talking. It was determined
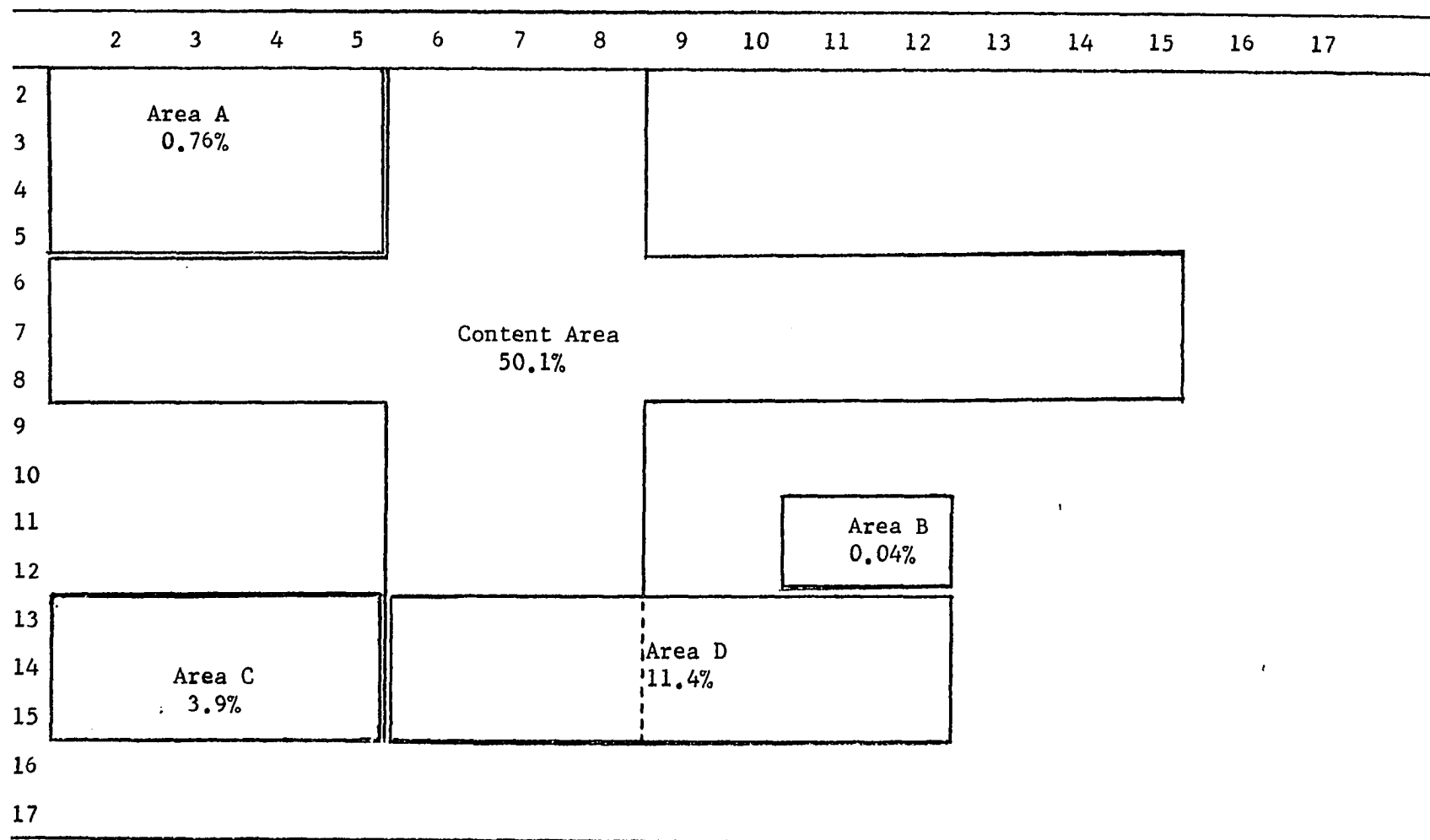
Figure 9. Composite areas of interaction

that there were limited steady-state cells in area A indicating a lack of

continued teacher acceptance, praise, reinforcement or use of pupils'

ideas. This area constituted 0.76 percent of the verbal behavior.

Area B composed a four-block area that concentrated on the continued

use of criticism of pupil behavior or pupils' responses and any transi-

tions between these categories. The area constituted only 0.04 percent

of the verbal behavior.

Areas C and D provided another aspect of teacher and pupil inter-

action. These cells isolated the immediate response of the teacher at the

termination of pupil verbal behavior. Area C is composed of the

transitional cells formed by the intersection of rows 13, 14, and 15,

which provided for student verbal behavior; and columns 1 through 5

which represented teacher acceptance of pupil feelings, praise or rein-

forcement of pupils, and the teacher use of pupils' ideas. Area C had

3.87 percent of the verbal interaction.

In contrast, area D accounted for 11.4 percent of verbal behavior.

This area is composed of the transitional cells formed by the intersec-

tion of categories 13, 14, and 15 with those of teacher behavior indicated

by categories 6 through 12, the direct aspects of teacher verbal behavior.

The predominate pattern of teacher response to the pupils was in the form

of direct influence.

As previously indicated, an examination of the transitional

cells provided a more thorough analysis of the teaching act itself. It

provided a method for identification of sequential patterns of verbal

behavior in the classroom and for a determination of relationships among

specific behavioral constituents.

A typical pattern to follow in reading such transitional cells is to begin with the most heavily loaded cell, in this particular case, cell 7-7, and proceeding from this cell, in descending frequency of occurrence, to identify the interaction within transitional cells and steady-state cells. This indicates the frequency of the occurrences of the most common categories of behavior. This is continued until all the loaded cells--that is cells containing apparently significant numbers of tallies when compared to the total number in the matrix--are utilized in some type of pattern. This was the technique employed in the following analysis.

From general observation, it was evident that the basic starting point for all interaction was from the steady-state cell 7-7 which constituted 23.7 percent of all teacher-pupil interaction categories. In examining the basic transitional cells (Figure 10), only those with a percentage of 1.00 or greater were employed. Beginning from the steady-state cell 7-7, the following transitions were determined by percentage of cell occurrence: cell 6-13 (2.82 percent), teacher asks question and pupil response, restricted; cell 8-13 (2.64 percent), teacher corrects without rejection and pupil response, restricted; cell 13-8 (2.42 percent), pupil response, restricted and teacher correction without rejection; followed by cell 10-14 (2.02 percent), teacher directs pattern drill and pupil responses, choral.

The 10-14 transitional cell had a high incidence of occurrence because of the number of pattern drills employed in these particular observational records.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2						1.05										
3																
4																
5																
6												2.82		1.22		
7					1.92	23.7						1.53		1.46		1.76
8												2.64				
9												1.57				
10													2.02			
11																
12																
13	1.72				1.07	1.86	2.42									
14																
15						1.83										
16																
17						1.89						1.07				

Figure 10. Basic transitional cells (those greater than 1.00 percent)

The completed series of transitional cells was as follows: cell 7-6 (1.92 percent), teacher gives information and teacher asks questions; cell 17-7 (1.89 percent), silence and teacher gives information; cell 13-7 (1.86 percent), pupil response, restricted and teacher gives information; cell 15-7 (1.83 percent), pupil response, unrestricted and teacher gives information; cell 7-17 (1.76 percent), teacher gives information and silence; cell 13-2 (1.72 percent) pupil response, restricted and teacher praise; cell 9-13 (1.57 percent) teacher gives direction and pupil response, restricted; cell 14-10 (1.56 percent), pupil response, choral and teacher directs pattern drill; cell 7-13 (1.53 percent), teacher gives information and pupil response, restricted; cell 7-15 (1.46 percent), teacher gives information and pupil response, unrestricted; cell 6-16 (1.22 percent), teacher asks question and pupil response, unrestricted; cell 17-13 (1.07 percent), silence and pupil response, restricted; cell 13-6 (1.08 percent), pupil response, restricted and teacher asks question; and cell 2-7 (1.05 percent), teacher praise and teacher gives information.

The above sequence represented a pattern of behavior based only on the percentage of category occurrence; however, greater clarity of the sequence of behavior is derived from an examination of those behaviors preceding and following a given cell located along a particular row or column. An inspection of column 7 yielded information concerning those behaviors which preceded the giving of information by the teacher. Similarly, an examination of row 7 provided those behaviors following teacher giving information.

Beginning along column 7 (Figure 11), which constituted the major

category of verbal behavior in this study, the intersections of rows with

this column were examined in order to determine the behaviors which pre-

ceded teacher giving information. The significant events (those having

a percent greater than 1.00) preceding teacher giving information, in

descending order, were silence, cell 17-7 (1.89 percent); pupil response,

restricted, cell 13-7 (1.86 percent); pupil response, unrestricted,

cell 15-7, (1.83 percent); and finally teacher praise or reinforcement of

student response, cell 2-7 (1.05 percent).

Next the events which followed the teacher giving information were

identified by an examination of the intersection of the several columns

with row 7. The first in descending order, after teacher gives information,

was teacher asks questions, cell 7-6 (1.92 percent), then cell 7-17 (1.76

percent), indicating teacher giving information followed by silence. In

this project, each time a teacher terminated a discussion or a lecture or

presenting a framework which would bring about pupil response there was

generally a period of silence which preceded a pupil's reaction. The

next two transitional cells in descending order were 7-13 (1.53 percent),

teacher giving information followed by pupil response, restricted; and

finally 7-15 (1.46 percent), teacher giving information and pupil response,

unrestricted.

Since the teacher traditionally has the dominant role in the class-

room, and since it was determined that teachers in this study were direct

in their teaching pattern, the next focus were those categories of teacher

verbal behavior which had a significant occurrence.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00	0.00	0.13	0.18	0.55	1.05	0.04	0.28	0.15	0.00	0.00	0.18	0.00	0.06	0.00	0.09
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
4	0.04	0.00	0.16	0.00	0.10	0.18	0.00	0.06	0.00	0.00	0.00	0.04	0.00	0.05	0.00	0.02
5	0.19	0.00	0.00	0.04	0.41	0.33	0.00	0.09	0.09	0.00	0.00	0.08	0.05	0.03	0.00	0.07
6	0.00	0.00	0.00	0.01	1.00	0.15	0.00	0.12	0.00	0.00	0.00	2.82	0.03	1.22	0.00	0.88
7	0.02	0.01	0.00	0.01	1.92	23.7	0.05	0.78	0.29	0.01	0.00	1.53	0.02	1.46	0.03	1.76
8	0.03	0.00	0.00	0.02	0.12	0.18	0.15	0.06	0.00	0.00	0.00	2.64	0.05	0.09	0.00	0.05
9	0.00	0.00	0.00	0.00	0.02	0.12	0.00	0.17	0.03	0.00	0.00	1.57	0.03	0.21	0.00	0.34
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.61	2.02	0.00	0.00	0.02
11	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
13	1.71	0.00	0.22	0.97	1.07	1.86	2.42	0.52	0.47	0.01	0.04	11.4	0.39	0.39	0.04	0.88
14	0.14	0.00	0.00	0.03	0.09	0.26	0.05	0.07	1.56	0.00	0.00	0.35	0.12	0.00	0.10	0.04
15	0.53	0.00	0.13	0.14	0.40	1.83	0.62	0.06	0.00	0.00	0.00	0.00	0.00	4.32	0.00	0.38
16	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.11	0.00	3.17	0.03
17	0.04	0.00	0.00	0.01	0.53	1.89	0.07	0.27	0.08	0.00	0.00	1.07	0.00	0.58	0.04	6.67
%	2.72	0.03	0.65	1.41	6.25	31.7	3.42	2.51	2.75	0.09	0.06	22.4	2.84	8.44	3.41	11.3

Figure 11. Percentages for each cell in the overall matrix

Category 6, teacher ask question, can be examined in a similar pattern as was done with category 7. An examination of the interaction of the rows with column 6 yielded the behaviors preceding the asking of a question. Again using the percentage level of approximately 1.00, it was noted that teacher giving information preceded the asking of a question, cell 7-6 (1.92 percent); this was followed in order by pupil response, restricted and teacher asking questions, cell 13-6 (1.07 percent).

To identify the sequence of events following the question, the interactions of the several columns with row 6 were studied. The greatest occurrences were in the transitional cells 6-13 (2.82 percent) and 6-15 (1.22 percent), pupil response, restricted, and pupil response, unrestricted.

Another column that has implications for the sequential pattern of teacher and pupil interaction was category 8 which is teacher correction of pupil response without rejection. Again by following the pattern of examining first preceding and then following events, an examination of the intersections of rows with column 8 indicated that the only significant event is pupil response, restricted, cell 13-8 (2.42 percent). An examination of intersection of the various columns with row 8 yielded only the significant percentage in the cell 8-13 (2.64 percent), teacher corrects without rejection followed by pupil response, restricted.

Figure 12 is an attempt to summarize graphically the pattern of
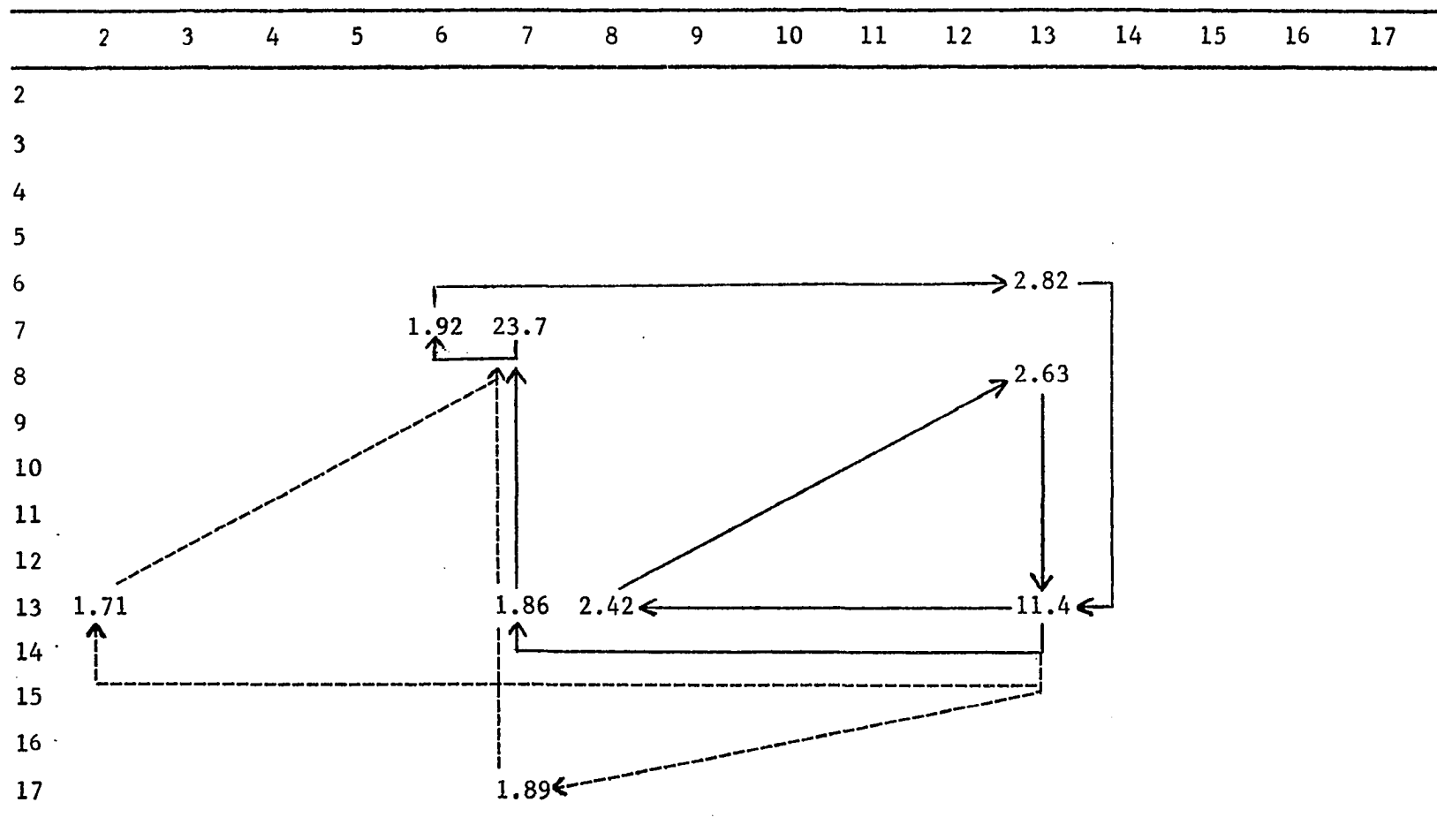
Figure 12. Sequential pattern of teacher-pupil verbal interaction (---- indicates sub-cycles of verbal interaction)

teacher and pupil interaction. The behavioral pattern began in the steady-state cell 7-7 (the figures in the cell were the percentages of the intersection in the overall matrix). Examining sequentially the events following the transactional pattern from row 6, it was found that the next preceding event was pupil response, restricted. By following the rule for reading interactions, the event preceding the steady-state cell 13-13 (pupil response, restricted, for a continuous period) was transitional cell, 6-13, or teacher asks question. Thus the behavior moved from 6-13 to cell 13-13 and this was followed by a move to cell 13-8 which indicated pupil response, restricted, followed by teacher correction. The next event was identified from column 13, and it was the transitional cell, 8-13, teacher corrects without rejection followed by pupil response. The pattern of interaction would then return to cell 13. The next event was in the transitional cell, 13-7, which indicated that the period of teacher giving information was preceded by pupil response, restricted.

Within each sequence of teacher-pupil verbal behavior there were subcycles of sequential behavior which were revealed by an analysis of the matrix and which were further supported by the actual recordings themselves. These two sub-cycles are indicated by the broken line in Figure 12. The first sub-cycle was identified from an examination of row 13. From the rule on reading the preceding and following events, it was determined that the third possible event in descending order in row 13 was teacher praise or encouragement, or reinforcement of the pupil response before returning to teacher gives information. The

second subcycle included the possibility of moving from pupil response, restricted, to a period of silence preceding the teacher giving information.

In review it appeared that the common pattern of behavior as identified through this analysis was as follows: teacher lectured for sustained period of time; this was followed by a question probably stated in a three-second interval or perhaps a six-second interval followed by pupil response. In most cases, if it were an extended pupil response (that is one requiring more than six seconds), it involved a correction by the teacher followed by a repetition of the correction by the pupil, a continuation of the answer followed by a return to teacher lecturing. Two intermediate subcycles were teacher praise or reinforcement of pupil response or a period of silence followed by the teacher's response.

General Features of Pupil-Teacher Interaction

Teacher-talk

The major characteristic of classroom interaction as observed in this investigation was teacher-talk. As can be seen in Table 1, this characteristic constituted 51.6 percent of the total observation record.

Pupil-talk

A prominent characteristic of upper-level foreign language classes has been the pupils' active use of the target language in situations which simulate "real-life" communication situations. Pupil-talk in

Table 1. Percentage of teacher-talk, pupil-talk, and noninteraction activities for each teacher

Category	1	2	3	4	5	6	Teacher 7	8	9	10	11	12	13	14	Mean
Teacher talk (1-12)	48.9	50.2	46.9	54.9	40.7	55.6	41.5	60.1	47.8	61.2	56.3	48.1	56.7	50.5	51.6
Pupil talk (13-15)	46.4	43.6	46.7	24.5	48.2	36.1	31.5	21.5	28.4	30.7	33.9	33.2	25.2	24.3	33.7
Noninteraction activities (16-17)	4.8	6.2	6.4	20.6	11.1	8.3	27.0	18.4	23.8	8.1	9.8	18.7	18.1	25.2	14.7

this investigation constituted 33.7 percent of the observations re-corded.

<u>Noninteraction activities</u>

Categories 16 and 17 provided for noninteraction activities; such activities constituted 14.7 percent of the observation record. From an examination of Table 2, it can be seen that category 16, use of audiovisual aids, constituted 3.41 percent of the total observation record; and the broad category of noninteraction activities, category 17, constituted 11.3 percent of this record. Also, from Table 2, it can be seen that three teachers (numbers 7, 9, and 12) employed an audiovisual aid in order to communicate information. In each situation, these teachers used a tape recorder and taped materials which accompanied the lesson being presented. This characteristic of classroom activity was antici-pated as modern educational technology has been employed in the teach-ing of modern foreign languages.

The general category for noninteraction activities, number 17, was used to record silent pauses in the communication process primarily during question-answer periods. These pauses were evident during the time when pupils were attempting to formulate answers. Another feature of this category was dictation exercises in which the teacher would read excerpts in French and have the pupils write the French. A final component of these noninteraction activities was classroom management-type activities. At times, the teacher would distribute materials, have the pupils pass in written assignments, or have the pupils perform other activities.

Table 2. Percentage for each category of teacher-pupil interaction for each teacher

Category	Teacher														Mean
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3.22	0.89	4.21	2.34	2.07	1.01	2.17	4.75	1.92	3.19	3.88	2.91	3.28	3.59	2.72
3	0.00	0.00	0.00	0.12	0.00	0.00	0.04	0.12	0.00	0.00	0.00	0.10	0.00	0.00	0.03
4	0.63	0.14	0.00	0.35	0.00	0.00	1.47	3.04	0.71	0.58	0.14	0.99	0.14	0.00	0.65
5	1.11	0.85	0.78	0.89	1.04	0.37	0.35	3.45	1.79	5.11	0.14	0.92	0.05	0.19	1.41
6	8.52	3.96	3.49	6.79	1.37	4.42	6.49	7.75	7.57	13.5	3.25	6.46	4.27	3.59	6.25
7	24.4	36.7	32.0	32.3	17.0	42.9	24.6	33.6	30.3	30.8	38.6	26.5	43.4	41.5	31.7
8	5.89	2.03	0.78	2.02	4.11	5.81	4.04	2.68	2.22	4.46	0.99	4.65	1.64	0.00	3.42
9	1.59	0.38	2.89	0.77	5.23	0.49	2.17	4.59	1.59	3.22	1.84	5.30	2.44	1.59	2.51
10	3.38	5.19	0.00	8.58	9.79	0.15	0.08	0.00	1.71	0.26	7.42	0.07	1.45	0.00	2.75
11	0.00	0.00	0.00	0.16	0.00	0.37	0.00	0.24	0.00	0.00	0.00	0.10	0.00	0.00	0.09
12	0.04	0.05	0.00	0.19	0.00	0.11	0.08	0.08	0.00	0.00	0.07	0.10	0.00	0.00	0.06
13	36.8	31.9	26.1	10.8	33.7	13.2	22.4	18.8	25.6	27.9	14.2	15.1	17.9	20.3	22.4
14	0.00	5.05	0.00	7.78	13.8	0.15	0.15	0.00	2.01	0.29	5.37	1.91	2.11	0.00	2.84
15	9.52	6.66	20.6	5.86	0.70	22.7	8.93	2.68	0.79	2.41	14.3	16.2	5.16	3.99	8.44
16	0.00	0.00	0.00	0.00	0.00	0.00	18.6	0.00	21.2	0.00	0.00	4.03	0.00	0.00	3.41
17	4.74	6.14	6.39	20.6	11.1	8.25	8.29	18.4	2.47	8.07	9.68	14.5	18.0	25.1	11.3

It was this investigator's feeling that the category systems studied, and the one employed in this investigation did not adequately provide for the categorization of noninteraction activities. It appeared that additional categories were needed to describe adequately such noninteraction activities in the foreign language classroom as dictation, testing, silent reading of language materials, or classroom-management activities.

This discussion described only the gross features of the verbal interaction between teachers and pupils. The following elaboration of the five questions which guided this study offers a more detailed analysis of these interactions.

Are language teachers direct or indirect in their teaching?

Flanders (25, 26, 27, 28) polarized teacher verbal behavior into direct and indirect teacher influences. From his studies, he developed a formula for determining the ratio of indirect teacher influence to direct teacher influence, which is termed the I/D ratio. Moskowitz, in modifying this system for use in the foreign classroom, determined a process for calculating the I/D ratios:

$$I/D = \frac{\text{categories } 1 + 2 + 3 + 4 + 5 + 6}{\text{categories } 7 + 8 + 9 + 10 + 11 + 12}$$

In interpreting I/D ratios, it must be understood that a ratio of 1.0 indicates that for every indirect statement there was one direct statement; an I/D ratio of 2.0 means that for every two indirect statements there was one direct statement. Table 3 presents the basic ratios

Table 3. Ratios for each teacher[a]

Ratio	1	2	3	4	5	6	7	Teacher 8	9	10	11	12	13	14	Over-all
I/D	0.38	0.13	0.22	0.24	0.12	0.11	0.33	0.45	0.34	0.57	0.15	0.31	0.16	0.17	0.11
i/d	0.99	0.34	1.73	0.42	0.21	1.23	1.73	2.31	1.34	2.46	0.45	0.87	0.89	2.37	0.89
FI/D	0.39	0.15	0.32	0.19	0.14	0.12	0.34	0.51	0.24	0.98	0.13	0.33	0.12	0.18	0.27
fi/d	0.82	0.27	1.73	0.41	0.21	1.23	1.73	2.02	0.86	2.30	0.67	0.90	0.89	2.37	0.83
EI/D	0.42	0.08	0.01	10.8	0.01	0.00	0.00	0.29	0.52	0.20	0.20	0.07	1.53	0.00	0.26
ei/d	21.0	7.00	0.00	0.00	0.00	0.00	0.00	7.14	20.0	3.91	0.15	0.28	0.00	0.00	2.01
TF/E	12.6	3.45	2.83	23.1	11.4	439.0	96.2	3.68	1.74	1.60	2.04	11.57	14.9	25.6	5.36
PF/E	5.92	6.76	1.26	27.3	27.3	191.4	201.7	2.31	4.14	1.79	18.2	81.0	18.8	121.0	6.81
Total F/E	8.12	4.55	1.84	24.3	16.8	304.6	124.3	3.22	2.31	1.66	3.45	18.2	15.9	34.7	5.87

[a]All ratios are read and interpreted in the same manner. A whole number represents a greater occurrence of the first item of the ratio, whereas a decimal represents a greater occurrence of the second item of the ratio.

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for each teacher. As shown in this table, the teachers in this study were direct in their teaching, with an I/D ratio of .111.

The revised i/d ratio was also calculated. This ratio is concerned with the motivation and control of the classroom situation and less concerned with the presentation of content. This ratio eliminates categories 6, 7, and 8 (asking questions, giving information, and correcting without rejection), and indicates whether the teacher was direct or indirect in his approach to motivation and control. The revised i/d ratio was determined as follows:

$$i/d = \frac{\text{categories } 1 + 2 + 3 + 4 + 5}{\text{categories } 9 + 10 + 11 + 12}$$

The teachers were more indirect in their approach to motivation and control of pupils as indicated by a revised i/d ratio of .892 (Table 3).

What are the dominant forms of teacher-verbal behavior?

Table 4 presented the categories of teacher verbal behavior in descending order of occurrence. The first category, in order of frequency, was number 7 (31.7 percent), teacher gives information. This finding was consistent with other research conducted by Flanders. In descending order, the second most frequently occurring category was that of teacher asks questions, category 6 (6.25 percent). The third category in decreasing occurrence was that of correction without rejection (3.42 percent), followed by the category 10 (2.75 percent), teacher directs pattern drill.

Category 2, teacher praise or reinforcement of pupil responses, constituted a greater percent (5.27) of teacher verbal behavior than

Table 4. Distribution of categories of teacher verbal behavior

Percentage	Category number
31.7	7
6.25	6
3.42	8
2.75	10
2.72	2
2.51	9
1.41	5
0.65	4
0.09	11
0.06	12
0.03	3
0.00	1

giving direction, category 9 (4.86 percent). This was due to the teachers' practices of reinforcing pupils' correct responses in the foreign language.

The last two categories of general importance (those having a percentage greater than 1.00) were category 5, teacher uses ideas of pupils verbatim (2.75 percent) and category 4, teacher uses ideas of pupils (1.26 percent).

Finally, Table 5 presented the occurrence of each category of teacher verbal behavior within the larger grouping of teacher-talk. This table provided further evidence of the predominance of the teacher lecturing, or giving information. Unfortunately, the FLint system did not provide for sub-classification of the broad category of giving information, such as structuring, fact stating, clarifying, defining, and evaluating, which would have provided greater insight into this important area of teacher verbal behavior.

The other categories of teacher verbal behavior can be examined in relation to the total perspective of teacher-talk from Table 5.

What is the dominant form of pupil-talk?

As shown in Table 1, pupil-talk constituted 33.7 percent of the total observation record. Again, from Table 5, each category of pupil verbal behavior can be viewed within the context of total pupil-talk. The predominant form of pupil verbal behavior was pupil response, restricted. Therefore, pupil - talk consisted primarily of reactions to teacher stimuli within a narrow framework of available responses from previously internalized linguistic frames.

The next category, in order of frequency of occurrence, was that of pupil response, unrestricted, or pupil initiated. (This specific category is treated more extensively in the following section.)

The final category of pupil-talk, pupil response-choral, constituted 8.5 percent of pupil verbal behavior. This category occurred in pattern-drill exercises, and the corresponding teacher verbal behavior, which must necessarily accompany this pupil activity, was category 10.

Table 5. Percentage of occurrence of each category of teacher and
pupil behavior within the generic grouping of teacher-talk
and pupil-talk

Category	Generic grouping
	% Teacher-talk
7	61.4
6	12.1
8	6.63
10	5.33
2	5.27
9	4.86
5	2.75
4	1.26
11	0.18
12	0.11
3	0.06
1	0.00
	Pupil-talk
13	66.5
15	25.0
14	8.5

The pattern-drill has a greater incidence in beginning foreign language courses as it is designed to develop habituated responses from those structures which present learning problems. It was anticipated that the incidence of this category of verbal behavior would be lesser in third-year language classes.

Finally, from Table 3, one can see the ratio of pupil use of French to use of English. The overall pupil F/E ratio was greater than that for the teacher (PF/E ratio = 6.81 and TF/E ratio = 5.36).

To what extent do pupils exhibit spontaneous use of the foreign language?

As has been previously discussed, category 15 provided for pupil responses elicited by broad questions of comments which caused the pupils to bring in their own ideas, opinions, reactions, and feelings. Within this category it was possible to identify a pupil's spontaneous use of French or his response which would include a wider range of possible answers from one of many possible responses which had been previously shaped. As can be seen from Tables 2 and 5, this category did not constitute a major portion of pupil responses; although a basic objective for upper-level language courses has been the development of pupils' ability to use the foreign language in a spontaneous manner or to use a greater variety of responses to teachers' questions. Additionally, as shown in Table 6, a greater percent of pupil use of English occurred in this category (22.1 percent).

Table 6. Comparison of observation totals in English and French and the percent of frequency of such occurrences for each category of verbal interaction[a]

Category	Total number observations	Observations in English	Percent	Observations in French	Percent
1	0	0	0.0	0	0.0
2	883	48	5.4	835	94.6
3	11	0	0.0	11	100.0
4	212	41	19.3	171	80.7
5	460	84	18.3	376	81.7
6	2030	377	18.6	1653	81.4
7	10280	1932	18.8	8348	81.2
8	1111	62	5.6	1049	94.4
9	814	25	3.1	789	96.9
10	892	55	6.1	837	93.9
11	30	4	13.3	26	86.7
12	19	2	10.5	17	89.5
13	7283	796	10.9	6487	89.1
14	924	2	0.2	922	99.8
15	2741	604	22.1	2137	77.9
N =	27690	4032	14.6	23658	85.4

[a]Categories 16 and 17 were not included as there were no opportunities for verbal interaction in these categories.

What was the pattern of English usage?

As can be seen in Table 6, total observations in English constituted 14.6 percent of the verbal interaction record. The pattern of English usage, as might have been expected, followed the pattern of teacher and pupil talk in French.

Except for teachers 6 and 7, all teachers interspersed English within the framework of their teaching. Naturally, most English was found in the categories of giving information or asking questions. The basic pattern of English usage was the conceptualization of linguistic items presented in French. In an effort to bring the concept more fully into view for the pupils, the teacher resorted to the use of English.

From Table 3, it can also be determined that teachers were very direct during their use of English; however, they showed a greater tendency to be indirect in situations which related to motivation and control. As can be seen the EI/D ratio was 0.26 whereas the ei/d ratio was 2.01.

DISCUSSION

Research data reviewed concerning teachers' styles in the classroom has established the fact that a typically direct teacher has an I/D ratio below .40 and a revised i/d ratio below 1.00. As indicated by the analysis of these teaching sessions, the teachers involved in this investigation conformed to the direct pattern of teaching style.

Since it is desirable that pupils in an advanced language program should have an opportunity to use the language in "real-life" communications situations, it appeared inconsistent that the teachers in third-year French classes would exhibit such direct styles of teaching. A necessary outcome of a direct teaching style would be limited opportunities for pupils to engage in meaningful communication in French; and in the classroom sessions which were observed in this study, that category of interaction which provided for the pupils' spontaneous use of the language, or free expression, constituted one-quarter of the pupils' verbal behavior.

One could postulate that the directness of style was a result of the teachers' insecure feeling in using the foreign language. Many foreign language teachers have not had thorough preparation in the language in situations which approximate "real-life" communication. This inability inhibits discussion of cultural items, linguistic items, the process of correction, and providing appropriate models for the pupils. Such insecurity and lack of confidence probably accounted for the degree of directness in the teaching style exhibited (I/D ratio of .111 for the French teachers observed).

The dominant form of pupil verbal behavior was in the category of pupil response, restricted. A prominent characteristic of contemporary foreign language teaching is the minimization of the use of the pupil's native language, and the insistence on the necessity of responding in situations, in the target language, which simulate "real-life" communication as closely as possible.

However, there were no specific periods observed in which the pupils could engage in such communication and could express freely their thoughts in the language. The teachers' tendency to correct immediately language errors appeared to prohibit any free expression in French.

Spontaneous use of the language is not developed without careful planning by the teacher; however, few of the teaching sessions observed in this investigation revealed any opportunity for a free, spontaneous, and unhibited expression in French. As has been indicated, the pupil's general frame of response was a limited reaction to a stimulus from the teacher. The pupils cannot develop the ability to communicate spontaneously in the foreign language when they spend the major portion of their classroom experience in listening to the teacher. They develop the skill only when they have the opportunity to communicate; however, by the directness of their teaching style, the teachers in this study were directly inhibiting the development of a spontaneous use of the foreign language.

A unique feature of the FLint system is that it provides for a categorization of teacher-pupil verbal behavior which occurs in English. In the analysis of the teaching sessions, it was not possible to determine

a significant pattern of English usage on the part of the teachers or the pupils.

It appeared, however, that the teachers reverted to English in order to explain items of linguistic or cultural difficulty. In many instances, this practice is an economy measure and does facilitate acquisition of basic language patterns and cultural items which are difficult for the pupil to comprehend. However, in all but two instances (teachers six and seven), the teachers interspersed English at various times throughout the teaching sessions. The teachers did not appear to employ a planned, discriminate use of the language to reinforce certain aspects of the teachings. Additionally, the pupils' frequent use of the language indicated no clear distinction between those periods of time when they were to be communicating in French or in English.

Although the overall pupil foreign language-to-English ratio (6.81) was greater than teacher foreign language-to-English ratio (5.36), the pupils used English more often in order to initiate contacts with the teacher or to express particular reactions to cultural or literary items. This would seem to reflect a pupil concern for a lack of ability to communicate freely or to initiate meaningful contacts in French with the teacher or with other pupils. It was significant that the category which provided for pupil spontaneous use of the language (category 15) was that category in which occurred the greatest use of English (22.1 percent).

Another interesting aspect of a pattern of English usage relates to direct and indirect teaching styles. The several I/D ratios were as

follows: I/D ratio .111; FI/E ratio .275; and EI/D ratio .264. As can be seen, the teacher's pattern of directness or indirectness did not vary in any significant measure whether the teacher was using French as the mode of instruction or whether the teacher was using English as the mode of instruction. However, in the revised i/d ratio, that ratio which gives emphasis to the motivation and control in the classroom teaching sessions, the following was revealed: revised i/d ratio .892; revised fi/d ratio .835; and revised ei/d ratio 2.01. As can be seen, the teachers were much more indirect in their approach to motivation and control when they used English. It appeared that the teachers observed were more comfortable in such situations when they used the native language as opposed to the foreign language. The teachers were much freer in their approach to providing motivational direction or exhibiting factors of discipline in the native language than when using French to carry out the same processes.

It would appear that teachers of French should study carefully their pattern of alternating the use of English and the foreign language so that such usage would reinforce the teaching-learning situation in the language classroom rather than divert pupil attention from the foreign language. This disruption of the free flow of French by either the teacher or pupils clearly mitigates against the internalization of French linguistic patterns. The pupils should have an opportunity to experience a sustained exposure to the language.

It was evident from the teaching styles observed in this investigation that the teachers were employing methodological techniques consistent with the audiolingual approach to language instruction.

However, if one accepts certain goals as essential for communication in the foreign language, it was also evident that the pupils observed probably would not achieve such goals. Grittner (32, p. 83) listed several goals as essential for communication, and for the verbal interactions observed in these teaching sessions, the appropriately stated goals are as follows: (1) speaking: to reorganize familiar vocabulary and grammatical forms and to apply them to new situations using pronunciation and intonation in a manner acceptable to a native speaker; (2) listening: to comprehend aurally new arrangements of familiar material when spoken at normal tempo and normal intonation and rhythm; and (3) concept: to apply spontaneously everything one has learned to new situations.

As previously discussed, the basic pattern of pupil response in French was a restricted, narrow reaction to a narrowly stated teacher stimulus (22.4 percent of observed behavior). The pupils didn't exhibit any ability to apply internalized vocabulary and grammatical forms to new situations and to generate original and acceptable language forms when presented with such opportunities, as limited as they were. This was further evidenced by the limited occurrence of category 15 (pupil response, unrestricted) which accounted for only 8.44 percent of observed behavior.

Although there was no direct attempt to assess the pupils' ability to understand the spoken language, the directness of teaching style would seem to indicate that this language skill had not been fully developed.

In any communication process, there is a basic model which operates: there is a source (a sender) and a destination (a receiver). However, if one of the two elements is dysfunctional, there is no communication. This model is equally valid when applied to foreign language instruction. If the pupil cannot send, that is speak the language, he cannot communicate; if he cannot receive, that is comprehend the spoken language, he cannot communicate.

Listening comprehension is a necessary skill for complete control of the foreign language, yet it appears to receive the least attention in the instructional process. The instructional materials observed in this investigation were designed to teach specific vocabulary or grammatical items through seeded dialogues and pattern drills. Such materials do not represent true listening experiences nor are they designed to do so; however, if the materials observed were exemplary of all such activities, then the pupils were receiving limited exposure to such experiences.

In the teaching sessions observed, the listening experiences were typically incidental and were provided by the teacher, other pupils, and occasionally by taped materials. These experiences were of the following nature: pupils reading aloud textual material or reports, pupils asking pupil questions or directing pupils in drill exercises, teacher presentations of cultural or literary items accompanied by question-answer exercises, taped cultural or literary items also accompanied by question-answer exercises, and taped pattern drills.

Albeit these experiences did provide opportunities for the pupils to listen to French, there were several limitations. The language patterns provided by the pupils did not truly represent typical French spoken in free conversation. The drill exercises, as mentioned above, are not designed typically to develop listening comprehension. Finally, the teachers' language style is the usual, single mode which the pupils encounter throughout their high school French experience, and this model could not be construed as real listening experiences.

The development of listening comprehension must complement the ability to speak the language. The strategy for such development must be carefully designed, and should not be incidental to the language program. Such experiences could include radio broadcasts of several types, theatrical production, and free conversations among native speakers, male and female.

An elemental concept in foreign language instruction is that the process of verbal communication in the foreign language is made possible by a system of habits which operate without the conscious awareness of the speaker. Pupil responses in French should be so automatic that they surface, without thought and without awareness of the process. As indicated, it was apparent that the pupils in the teaching situations observed did not possess a sophisticated set of automatic habits which permitted them to respond automatically in French in new situations. This situation led this observer to question the possibility of attempting to bring the pupils to this level of competence within the framework of the traditional high school program.

It is difficult to establish a cultural island within the high school setting in which the foreign language pupil can become totally immersed in the language and the culture of the country which he is studying. The lock-step class schedule, the constraints of much of the current instructional materials, and the teachers' language competence seem to mitigate against the full development of the four-fold aim of language instruction: listening, speaking, reading, and writing.

In addition, although not a direct aspect of this investigation, it was difficult to eliminate consideration of the quality of language employed during the teaching sessions.

An inherent assumption in the modern methodology of language teaching and learning has been the requirement for authenticity of model. It is desirable that the language student should have before him a constant imitation of a native or near-native model upon which he can base his linguistic pattern; however, the spurious language models provided by teachers in this study opened the question of the adequacy of the model in the foreign language. As previously stated, it is this investigator's opinion that a basic cause of the overt directness on the part of these language teachers derives from their concern relative to their ability to control the language. However, several of the teachers observed did employ mechanical aids to provide the authentic model in the foreign language on which the pupils could model their language patterns.

Although the implications of this investigation are limited-both by the sample size and the setting, nevertheless the findings seem to have certain implications for the teaching of French in particular, and

the teaching of foreign languages in general.

As suggested by Banathy (9, p. 491), a valid basis for the development of a preparatory program for language teachers would be through a detailed analysis and study of the actual performance of the teacher in the foreign language classroom. From such analyses, designers of programs would be able to describe and to specify the desired teacher competencies.

Such a focus would be in concert with the emerging interest in the study of teaching as a subject for research, and with this translation of the categorized behaviors into a systems approach for the preservice and inservice education of foreign language teachers.

However, in addition to the necessity of systematically gathering evidence of the behavior of teachers and pupils in the foreign language classroom as a basis for preparatory programs are the more important decisions as to which behaviors are most appropriate for the secondary-school teacher of French or any other language at any level. Such decisions cannot be made without further _in situ_ research in the public schools, and this will require the cooperation of foreign language teachers, school administrators, and those researchers interested in furthering the teaching of foreign languages.

Additionally, one aspect of foreign language instruction which does not appear to receive appropriate attention is that of listening comprehension. There is a need to examine critically current instructional processes and materials to determine the emphasis given this important

communication skill and to ascertain its relative importance in the instructional sequence.

The typical French pupil can identify vocabulary items in isolation; however, when he encounters a real language situation, the native speaker's use of liaison, elision, and assimilation (in French), he is unable to identify and to comprend subsequently these same language items. The normal speed of the utterances and the closed junctures between words and the morphophonemic alterations create a barrier to full understanding.

Consequently, the development of aural comprehension must receive careful consideration by language teachers. It must become a completely integral part of the total process of foreign language instruction. Yet it is an incremental process, and there is a need to consider the rate of individual development.

A related issue is the opportunity for the pupil to have real speaking experiences, and the findings of this investigation indicated that relatively few opportunities were provided in this area.

Once the pupil has internalized basic vocabulary and grammatical forms through seeded dialogues and pattern drills, the teacher must provide appropriate exercises which will require the pupils to recombine these previously learned items and to apply them in new situations.

The teacher must nurture carefully pupil use of the language, and as confidence develops, the teacher must permit a greater latitude of pupil error. The teacher must consider the psychological impact of appropriate reinforcement and correction of pupil verbal behavior in the

language. If the teacher reacts too quickly to pupil error at this stage of development, he will inhibit pupil use of the language. Teachers in the sessions observed in this investigation did tend to correct immediately pupil error.

Perhaps it is unfortunate that so much emphasis in early language instruction is placed on immediate reinforcement and correction of pupil responses as this practice appears to continue throughout the advanced level of language instruction.

Finally, in the examination of the findings of this investigation and the subsequent discussion, there are several recommendations for further research.

This investigation should be repeated with a larger sample of teachers and with a greater number of teaching sessions in order to obtain further data concerning the pattern of teacher and pupil verbal behavior in advanced level language courses as well as in beginning and intermediate levels.

This type of study should be repeated over a greater period of time and measures of student growth in the language through means of pre-to-post test gains to see if there is a relationship between pupil growth in the language and patterns of teacher and pupil verbal interaction.

The FLint system provides for many categories of teacher-pupil verbal interaction, and it retains the inherent features of the Flanders' technique for evaluating direct and indirect influence. However, the major categories of verbal behavior identified from this study were too broad for an in-depth investigation. It is suggested that additional

research incorporate sub-dimensions in the major category of interaction identified in this study: teacher gives information; teacher asks questions, student response, restricted; student response, unrestricted; and non-interaction activities. Such sub-dimensions could provide for a more powerful analysis of these major categories of interaction. These sub-dimensions could include classroom analysis systems which focus on the cognitive domain also.

Although the FLint system provides for the categorization of non-verbal behaviors, the utilization of magnetic tape recordings prohibited an examination of this aspect of the foreign language classroom. Therefore, it is recommended that research in non-verbal communication be carried out to determine these patterns of behavior and their influence on language learning.

There is a need for experimental and developmental research on the scope and sequence of listening and speaking experiences necessary for development of the communication process in foreign language skill acquisition. Such research could focus on the methodology, the instructional materials, and the role and the rate of correction and reinforcement of pupil responses in the foreign language.

SUMMARY

This study was designed to examine and to determine patterns of teacher-pupil verbal behavior in third-year high school French classes. In conjunction with the basic problem, five questions were posed which guided the development of the investigation:

1. Are language teachers direct or indirect in their teaching?

2. What are the dominant forms of teacher-verbal behavior?

3. What are the dominant forms of pupil-verbal behavior?

4. To what extent do pupils exhibit spontaneous use of the foreign language?

5. What is the pattern of English usage?

The basic data for this study were obtained through a systematic observation of 54 French-three classes submitted by 14 teachers located in the States of Iowa, Minnesota, and Wisconsin.

One hundred fifty teachers of third-year French in the three-state area were contacted relative to the nature and purpose of this study, and 24 teachers indicated positive interest in participation in this study. However, only 54 usable teaching sessions were provided.

Many researchers have developed systems to observe and record objectively teacher and pupil behavior in the classroom setting. Flanders has developed a unique technique for observing and recording in sequence the verbal events in the classroom. In reviewing the literature and research in teaching, it was determined that the FLint system, developed by Moskowitz, which was based on the strategy inherent in the Flanders'

system, was the most satisfactory instrument to employ in the analysis

of the teacher-pupil verbal behavior in third-year French classes.

The classroom teaching sessions were systematically analyzed in

terms of a modified version of the Flint system, which consisted of 17

categories of verbal behavior (see Figure 4). During the observational

period, the investigator recorded a category number every three seconds

or sooner if a change of behavior occurred within the three-second

interval. The completed observational record consisted of 32,457

tallies, and based on a single observational record every three seconds,

the average for each teacher was 600 observational records for each

teaching session or 30 minutes of teaching time during each session.

Once the observational record for each teacher was completed, the

data were entered into a 17 by 17 matrix for each teacher, and finally

an overall matrix which incorporated all observational records from the

54 classes was developed.

The predominate feature of the third-year French classes observed

in this study was that of teacher-talk. Teacher-talk constituted 51.6

percent of all verbal interaction. Pupil-talk constituted 33.7 percent

of all verbal behavior. Although this figure was above the average

that Flanders has observed in most academic subjects, it must be assumed

that within a foreign language classroom where pupil verbal participation

is encouraged to a greater degree by virtue of the nature of the subject,

that this degree of verbal participation should be anticipated in a

third-year foreign language class situation.

Non-interaction activities constituted 14.7 percent of the observed

observational record. Of this 14.7 percent, 3.41 percent was devoted to activities in which information was communicated by use of a mechanical teaching aid, the tape recorder and pre-recorded tape material which accompanied the lessons under consideration. Additionally, the 11.3 percent of other noninteraction activities consisted mainly of periods of student written exercises generally in the form of dictations.

The ratio of indirect teacher influence to direct teacher influence was calculated as well as a revised indirect-direct ratio.

The I/D ratio indicated the relationship of the indirect teacher statements to direct teacher statements. In the 54 teaching sessions, the I/D ratio for all teaching situations was .111. This would indicate a high degree of directness on the part of the teachers involved in this study. The revised i/d ratio which deals with the degree to which the teacher was direct or indirect in his control or his discipline in the classroom (this ratio removes the consideration of giving information, asking questions and correcting students without rejection) was found to be .892. This indicated that the teachers participating in this study were more indirect in their approaches to control and discipline in the classroom.

The dominant form of teacher verbal behavior was that of giving information, category 7 (51.6 percent). This finding was consistent with the work done by Flanders and others who have observed the classroom verbal behavior. Within this framework of verbal behavior, additional ratios were identified for the teacher. The

language teacher's pattern of directness continued whether he conducted his classroom sessions in French or in English. The only exception was the revised ei/d ratio which was 2.01; whereas, all other I/D ratios were below 1.00. Another ratio which has relationship to the pattern of teacher-verbal behavior was the ratio of teacher use of French to English. However, the teacher's dominant form of verbal communication was in French. The teacher F/E was 5.36, and the total French to English ratio, which incorporated both teacher and pupil use of French, was 5.87.

The dominant form of pupil-verbal behavior was in category 13, identified as pupil response, restricted, that is pupils responding to the teacher within a narrow and limited range of available or previously shaped responses. This category also incorporated situations in which the pupil responded individually in a drill session or when the pupil was reading aloud in the foreign language. It was noteworthy that pupil reaction, unrestricted or pupil initiated, (category 15), i.e., pupil responding to the teacher with his own ideas, opinions or reactions and feelings, or spontaneous use of the language, constituted a smaller percent of the interaction, 8.44 percent of the verbal interaction. This can be contrasted with the occurrence in category 13 which was 22.4 percent.

The preceding information had direct relationship to the occurrence of spontaneous use of the foreign language by the student. Category 15 specifically identified the opportunities for the student to exhibit the use of the foreign language in unrestricted situations. Within this

category the pupil reacted to rather broad or general questions by the teacher, initiated comments or statements in the foreign language. The greater percent of English usage occurred in this category, and more of the pupil questions seeking information were presented in English than in French.

Observational records of teacher or pupil verbal behavior in English constituted 14.6 percent of the total observations in categories 1 through 15. There was no specific pattern of English as the FLint system merely provides for the recording of the English categories; however, the most frequently occurring use of English was in relationship to teacher giving information or pupil response, unrestricted. Teachers frequently reverted to English in order to explain grammatical principles or to translate particular idiomatic or literary expressions with which the pupils were not familiar. Complementing this particular behavior, the pupils generally resorted to English to solicit specific items of information on grammar or on literary questions.

One observation was the pattern of a shifting from the foreign language to English within narrow time frames by the teacher. Although there were sustained periods of use of French, teachers often disrupted the presentation in French, and employed English. It appeared that teachers were attempting to capitalize upon the pupil's English in order to simplify the presentation of linguistics or literary terms.

From an analysis of the matrix itself it was possible to identify a pattern of teacher-pupil verbal interaction. The behavioral sequence flowed from teacher lecturing to teacher asks question——➤pupil

response——>teacher corrects pupil——>pupil response, restricted (sub-cycle: pupil response restricted to teacher praise, encouragement or reinforcement or pupil response, restricted to silence)——>teacher giving information. It appeared that the basic pattern of teacher and pupil verbal interaction was teacher structuring--teacher solicitation--pupil response--teacher reaction.

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ACKNOWLEDGEMENTS

APPENDIX A. LETTER TO FRENCH TEACHERS

In partial fulfillment for the requirements for the doctor's degree in education at Iowa State University, I am conducting a study of the teaching of French at the third year level in the three state area of Iowa, Minnesota and Wisconsin. This study is being completed under the direction of Dr. Harold E. Dilts, Professor of Secondary Education, College of Education, Iowa State University, Ames, Iowa.

This study will involve the use of interaction analysis, a technique for quantifying teacher-student interactions in the classroom. The system utilized in this study has been modified from the system developed by Dr. Ned Flanders at the University of Michigan. In modifying this technique, teachers of modern foreign languages in Iowa participated in a pilot project during the 1965-1966 school year. The cooperation of these teachers and the experiences of working with this technique have prompted my interest in carrying this project further.

My purpose in writing you is to determine your interest and willingness to participate in such a study. As basically designed, a teacher's involvement would not disturb the normal teaching process. Participating teachers would be asked to tape record four regular classroom teaching situations during a four-week period. I will provide the magnetic recording tapes. Additionally, you would need to complete a brief personal data sheet, which is included with this letter.

As a former French teacher and state foreign language consultant, I realize the problems faced by language teachers on all levels; and I realize that you are very busy people with many demands placed on you during the school year. However, I feel that this project will truly contribute to the research on teaching, at the actual classroom level, and it is with sincere interest in the profession and the teaching of French that I seek your cooperation in this study.

If you would be interested in cooperating in this study, please complete the enclosed personal data sheet, and return to me in the attached stamped envelope.

Please be assured that each teacher, school and student will remain anonymous, and the material collected will be strictly confidential. Each participating teacher will receive a copy of the study if so requested.

Cordially yours,

Orrin Nearhoof

APPENDIX B. PERSONAL DATA SHEET

PERSONAL DATA SHEET

Last name	First name	Middle name

Name of School	School Address	Zip code

1.___ Bachelor's degree
  ___ Master's degree   Indicate the degree(s) you
  ___ Other degree: Specify_____ have earned.

2.___ Undergraduate major in French Indicate the level of preparation
  ___ Undergraduate minor in French you have in French.
  ___ Graduate major in French   Major: 24 or more hours.
  ___ Graduate minor in French   Minor: 15-20 semester hours.

3.___ 0-10
  ___ 11-15   Indicate the total number of undergraduate
  ___ 16-20   semester hours you have earned in French.
  ___ 21-25   (Convert quarter hours to semester hours.)
  ___ 26-30
  ___ 31 or over

4.___ 0-10
  ___ 11-15   Indicate the total number of graduate semester
  ___ 16-20   hours you have earned in French.
  ___ 21-25   (Convert quarter hours to semester hours.)
  ___ 26-30
  ___ 31 or over

5.___ NDEA French Institute
  ___ Foreign travel   Indicate any specialized
  ___ Foreign study   French study.
  ___ Specialized language
      school: Specify_____

6.___ First year
  ___ 2-4
  ___ 5-9   Indicate total years of teaching experience.
  ___ 10-14
  ___ 15-19
  ___ 20 or over

7.___ First year
___ 2-4
___ 5-9   Indicate total years of experience of teaching
___ 10-14   French.
___ 15-19
___ 20 or over

8.___ First year
___ 2-4
___ 5-9   Indicate total years of experience teaching
___ 10-14   French in this school.
___ 15-19
___ 20 or over

9.___ 100
___ 80
___ 60   Indicate percent of time teaching French.
___ 40
___ 20

APPENDIX C. INSTRUCTION FOR RECORDING

To: Participating French teachers

From: Orrin Nearhoof

Subject: Procedures for recording classes

I would like to point out again that this study is <u>not</u> an evaluation of the teacher, student ability or teaching methods. The purpose is the description and analysis of teacher-pupil interactions in French-three classes. Consequently, the taped session should be a normal teaching situation.

Following are some guidelines to assist you in preparing the tapes:

1. For otpimum recording level, place microphone equal distance from you and the class.

2. In order to achieve a natural atmosphere, you might make one or two practice recordings of the class. This would provide an opportunity for the class to become adjusted to the presence of the tape recorder.

3. These practice recordings would also permit you to check the necessary recording (volume) level and position of the micro-phone.

4. Record at 3-3/4 speed.

5. Record at least thirty minutes of teaching, including any and all teacher-pupil interactions and distractions.

6. Record only one teaching session on each side of the tape.

7. Please include an identification of school and teacher. This could be written on a slip of paper and included with the tape.

When you finish with this tape, return to me in the enclosed, stamped mailing envelope. Please seal.

As soon as I receive the tape, I shall forward another so that you may complete the required (for the purposes of the study) number of recordings.

In closing, I again thank you for your participation.

Cordially,

Orrin Nearhoof

APPENDIX D. SELECTED CHARACTERISTICS OF
TEACHERS

Teacher	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Degree level	M.A.	B.A.	B.A.	B.A.	M.A.	B.A.	M.A.	M.A.	B.A.	B.A.	B.A.	B.A.	B.A.	B.A.
Undergraduate preparation in French in semester hours	31+	28	23	18	23	31+	31+	31+	31+	31+	28	31+	28	28
Graduate preparation in French in semester hours	31+	18	0	5	31+	5	18	23	5	0	0	5	0	0
Total years teaching experience	12	7	7	3	20+	20+	20+	7	7	3	3	12	12	3
Total years experience teaching French	12	7	7	3	20+	7	20+	7	7	3	3	7	3	3
Total years teaching French in present school	7	7	7	3	20+	7	12	7	3	3	3	7	1	1
Percent of time teaching French	100	100	100	60	100	100	100	100	100	100	40	100	80	100

(Selected characteristics of participating teachers: information based on range intervals from personal data sheets)

APPENDIX E. MODIFIED FLINT SYSTEM

Explanations of the Categories in the Modified FLint System

Category 1 - Teacher accepts, discusses, refers to, or communicates understanding of student feelings in the past, present, or future. This is done in a non-threatening way. When using this category, a teacher is saying in essence, "I am willing to listen to you express your feelings."

Category 2 - Teacher praises or encourages students. These may be statements of brief or more extended praise. In light of today's goals of language learning, the foreign language student is expected to participate frequently. Therefore, the foreign language teacher is afforded the possibility of reinforcing the responses by praising the student or encouraging him to go on or continue with his efforts.

Category 3 - The foreign language teacher intentionally jokes, kids, or attempts to be humorous. The joking and humor, however, must not be at anyone's expense. If the teacher says something which was interpreted as humorous or funny but the teacher did not intend it to be funny or did not realize it would be interpreted thusly, it is not categorized as 3. Unintentional humor is not included in this category.

Category 4 - The foreign language teacher accepts, clarifies, interprets, or uses the ideas of the students. The ideas must be rephrased by the teacher but still must be recognized as the contribution of the student. The idea provided by the student must be heard in the words used by the teacher.

Category 5 - The foreign language teacher repeats verbatim the words of the student. This category provides discrimination between two distinctive kinds of teacher use of student ideas or responses. Category 5 is necessary as the foreign language teacher tends to repeat correct responses of students for the benefit of the class and for reinforcement of correct responses.

Category 6 - The foreign language teacher asks questions of the students to which he expects a response. The teacher may or may not get a response, but the fact that one is anticipated makes the statement a 6. Rhetorical questions are not categorized as 6's.

The questions may be those contained in a conversation or a pattern drill. They may be broad or narrow questions. Broad questions give the student an opportunity to assimilate the language he knows, to produce an original response which he had to think through. Narrow questions require specific, predictable responses which the teachers wants. There are only a limited number of responses which can be given with narrow questions.

Category 7 - The foreign language teacher gives information or opinions, lectures, gives procedures, or asks rhetorical questions. The teacher

may be informing students of the pronunciation of certain sounds or words, explaining to students something of the culture of the people of the language, telling the students ways which will help them to learn a foreign language.

Category 8 - The foreign language teacher corrects the student response with neither intonations nor words which communicate rejection. If a student pronounces something incorrectly and the teacher gives the correct pronunciation to the student without inflections or disapproval, this is categorized as 8. Since the foreign language class provides many occasions for student to make errors, categories 8 and 12 are included to indicate the opportunities the teacher had for correcting errors and to differentiate between how often the teacher communicates acceptance (8) or rejection (12) of the notion of errors being made in the foreign language class. In other words, to what extent does the teacher communicate that it is understood and acceptable that errors will be made in the class as opposed to the notion that it is not expected that students should be making such errors.

Category 9 - The foreign language teacher gives directions with which the students are expected to comply. These may be routine classroom directions, such as "Open your books to page 23 and read the first paragraph" or directions students are to follow which indicate that they understand what the teacher is saying in the foreign language. The category was also used in situations in which the teacher uses the student's name as a direction for response. Calling on a student to answer a question.

Category 10 - The foreign language teacher gives a statement which students are to repeat exactly, to make substitutions in, or to change from one form to another. These pattern drills are, in effect, implied directions, for students are expected to repeat after the teacher or make the necessary substitutions or transformations.

Category 11 - The foreign language teacher criticizes the behavior of students. For example, the teacher may criticize a student who has not done an assignment or is not paying attention. The teacher may communicate anger, annoyance or rejection of student behavior.

Category 12 - The foreign language teacher criticizes the responses of the student and communicates by words or intonation, displeasure, annoyance, or rejection of the response. Words such as, "No" or "That's not correct", are classified under this category. If the teacher gives the correct response after such a statement, this behavior is classified also as 12.

Category 13 - The students respond predictably to the foreign language teacher. Responses are regarded as limited and therefore predictable

whenever there is a narrow range of student replies possible due to the (1) nature of the teacher's questions (or directions) or (2) to a very limited repertoire of responses which the learners could emit to the question (or direction). Orally reading aloud by individuals or responding individually in drill situations.

Category 14 - The students respond chorally to the teacher's questions or directions. This category is used in pattern drills.

Category 15 - The students respond unpredictably to the foreign language teacher. These responses are elicited by broad questions which call for students bringing in their own ideas, opinions, reactions, feelings. They are also brought about by the teacher soliciting responses which call for students responding within a wider range of possible answers which have been previously shaped. The students in this case must think through a variety of responses he might make and select one of his choosing.

The student may initiate a question or a comment not directly solicited by the teacher, or a student may speak to another student, or shifting from category 13 to category 15 by elaborating on a narrow response or going off on a tangent.

Category 16 - The teacher uses an audiovisual aid to communicate information.

Category 17 - This category is recorded when three seconds of silence occurs either while a teacher is talking or between the interaction of the teacher and the students. Pauses of quiet during which there is no interaction.

This category is used when there is confusion in the classroom during which no category can be recorded. It is also used for other non-interaction activities such as dictation, silent reading, singing in the classroom, or classroom management activities (passing out paper, announcement over loud speaker).

Category E - Since in the foreign language class one may hear both the foreign language and English spoken, category E is included to distinguish those statements which are made in English from those said in the target language. It is assumed that the foreign language is being used whenever a category from 1 to 15 is recorded. Whenever these categories are given in English, "e" is recorded along with the regular category.

Conversion: Modified FLint and Flanders

FLint		Flanders	
Category 1:	Accepts feelings	Category 1:	Accepts feelings
Category 2:	Praises or encourages	Category 2:	Praises or en-courages
Category 3:	Jokes		
Category 4:	Uses ideas of students	Category 3:	Uses ideas of students
Category 5:	Uses ideas verbatim		
Category 6:	Asks questions	Category 4:	Asks questions
Category 7:	Gives information	Category 5:	Gives information
Category 8:	Corrects without rejection		
Category 9:	Gives direction	Category 6:	Gives direction
Category 10:	Directs pattern drill		
Category 11:	Criticizes behavior	Category 7:	Criticizing
Category 12:	Criticizes responses		
Category 13:	Student-response, restricted	Category 8:	Student-talk, response
Category 14:	Student-response, choral		
Category 15:	Student-response, un-restricted	Category 9:	Student-talk, initiation
Category 16:	Use of audiovisual aids		
Category 17:	Noninteraction activities	Category 10:	Silence or con-fusion

APPENDIX F. TEACHER INTERACTION MATRICES

Table 7. Interaction matrix of teaching sessions showing the percent of observations in each cell for each category column, and for frequency of occurrence of English in each category

Teacher no. 1

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00	0.00	0.08	0.28	0.79	0.83	0.08	0.04	0.75	0.00	0.00	0.32	0.00	0.00	0.00	0.04
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.19	0.00	0.16	0.16	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.00
5	0.04	0.00	0.00	0.00	0.19	0.44	0.00	0.12	0.19	0.00	0.00	0.04	0.00	0.00	0.00	0.08
6	0.00	0.00	0.00	0.04	1.63	0.36	0.00	0.08	0.00	0.00	0.00	2.51	0.00	2.75	0.00	1.15
7	0.00	0.00	0.00	0.00	2.51	16.8	0.12	0.56	0.24	0.00	0.00	1.63	0.00	1.55	0.00	1.03
8	0.00	0.00	0.00	0.00	0.12	0.19	0.16	0.04	0.08	0.00	0.00	4.98	0.00	0.19	0.00	0.12
9	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.04	0.00	0.00	0.00	0.91	0.00	0.36	0.00	0.16
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.19	0.00	0.00	3.03	0.00	0.00	0.00	0.12
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
13	2.03	0.00	0.12	0.32	1.47	2.47	4.90	0.24	1.71	0.00	0.04	22.2	0.00	0.19	0.00	1.11
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	1.15	0.00	0.24	0.44	0.79	2.31	0.64	0.16	0.00	0.00	0.00	0.04	0.00	3.42	0.00	0.32
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.04	0.72	0.87	0.00	0.24	0.16	0.00	0.00	1.11	0.00	0.99	0.00	0.59
%	3.22	0.00	0.63	1.12	8.50	24.4	5.90	1.60	3.36	0.00	0.04	36.8	0.00	9.49	0.00	4.72
%E	0.72	0.00	0.08	0.04	0.28	25.1	0.12	0.00	0.00	0.00	0.00	4.02	0.00	2.67	0.00	0.00

Table 7. (Continued)

	Teacher no. 2															
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00	0.00	0.05	0.09	0.19	0.38	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.05	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.05	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.23	0.00	0.00	0.05	0.14	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.05
6	0.00	0.00	0.00	0.00	0.71	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.33
7	0.00	0.00	0.00	0.00	1.65	27.8	0.05	0.14	0.42	0.00	0.00	1.37	3.30	0.05	0.00	1.84
8	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.00	0.00	0.00	0.00	1.84	0.00	0.05	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.28	0.05	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.23	4.86	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
13	0.56	0.00	0.05	0.61	0.52	2.08	1.84	0.09	0.14	0.00	0.00	24.7	0.00	0.23	0.00	0.99
14	0.05	0.00	0.00	0.00	0.00	0.38	0.00	0.00	4.39	0.00	0.00	0.00	0.05	0.09	0.00	0.00
15	0.05	0.00	0.00	0.09	0.14	4.06	0.09	0.05	0.00	0.00	0.00	0.00	0.00	1.84	0.00	0.33
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.38	1.65	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.28	0.00	2.59
%E	0.00	0.00	0.00	0.33	0.52	10.3	0.09	0.00	0.00	0.00	0.05	1.84	0.00	3.78	0.00	0.00
%	0.89	0.00	0.15	0.84	3.96	36.7	2.03	0.38	5.19	0.00	0.05	31.9	5.05	6.64	0.00	6.13
%.	0.00	0.00	0.00	0.00	0.38	1.65	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.28	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						Teacher no. 3										
2	0.00	0.00	0.00	0.13	0.36	2.23	0.06	0.66	0.00	0.00	0.00	0.60	0.00	0.06	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.18	0.00	0.00	0.00	0.24	0.30	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.12	0.00	0.00	0.00	0.96	0.00	1.02	0.00	0.48
7	0.00	0.00	0.00	0.00	1.26	24.6	0.00	1.14	0.00	0.00	0.00	2.35	0.00	1.02	0.00	1.57
8	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.18	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.00	0.00	0.00	2.41	0.00	0.24	0.00	0.12
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	3.19	0.00	0.00	0.60	0.12	1.63	3.19	0.48	0.00	0.00	0.00	16.4	0.00	0.36	0.00	0.12
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.84	0.00	0.00	0.00	0.24	1.69	0.00	0.12	0.00	0.00	0.00	0.00	0.00	17.3	0.00	0.42
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.36	1.20	0.00	0.06	0.00	0.00	0.00	0.54	0.00	0.60	0.00	3.61
%	4.21	0.00	0.00	0.78	3.48	31.9	3.49	2.88	0.00	0.00	0.00	26.1	0.00	20.6	0.00	6.32
%E	0.00	0.00	0.00	0.00	0.12	12.0	0.06	0.00	0.00	0.00	0.00	1.69	0.00	18.9	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
							Teacher no. 4									
2	0.00	0.00	0.03	0.19	0.22	1.18	0.03	0.13	0.25	0.00	0.00	0.13	0.00	0.00	0.00	0.16
3	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
4	0.03	0.00	0.03	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
5	0.22	0.00	0.00	0.03	0.06	0.09	0.00	0.00	0.19	0.00	0.00	0.00	0.54	0.03	0.00	0.03
6	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.03	0.00	0.00	0.03	3.04	0.06	1.63	0.00	1.15
7	0.00	0.09	0.00	0.03	2.30	23.7	0.00	0.16	1.50	0.00	0.00	0.93	0.03	1.98	0.00	1.63
8	0.00	0.00	0.00	0.00	0.03	0.09	0.00	0.03	0.00	0.00	0.00	1.73	0.09	0.03	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.48	0.09	0.09	0.00	0.06
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	1.76	6.69	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.03	0.00	0.03	0.00	0.00	0.00	0.03
12	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.06	0.00	0.00
13	1.02	0.00	0.00	0.61	0.96	1.66	1.57	0.09	1.86	0.03	0.06	2.37	0.00	0.06	0.00	0.54
14	0.54	0.00	0.00	0.00	0.80	1.15	0.16	0.19	4.23	0.09	0.03	0.03	0.25	0.00	0.00	0.29
15	0.51	0.00	0.29	0.35	0.57	2.27	0.22	0.03	0.00	0.00	0.06	0.00	0.00	1.31	0.00	0.22
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.89	2.02	0.03	0.06	0.38	0.00	0.00	0.32	0.00	0.51	0.00	16.3
%	2.32	0.12	0.35	1.21	6.75	32.3	2.01	0.75	8.57	0.15	0.18	10.8	7.75	5.83	0.00	20.5
%E	0.00	0.00	0.00	0.03	2.05	0.19	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00

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Table 7. (Continued)

Teacher no. 5

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00	0.00	0.00	0.08	0.08	0.90	0.04	0.70	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.16
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.16	0.08	0.00	0.08	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.16
7	0.00	0.00	0.00	0.00	0.12	0.04	0.00	0.04	0.00	0.00	0.00	0.70	0.00	0.30	0.00	0.95
8	0.00	0.00	0.00	0.00	0.45	13.1	0.00	0.95	0.37	0.00	0.00	0.99	0.21	0.00	0.00	0.04
9	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.08	0.04	0.00	0.00	0.70	0.00	0.21	0.00	0.95
10	0.00	0.00	0.00	0.00	0.00	0.21	0.04	0.50	0.29	0.00	0.00	3.43	0.09	0.00	0.00	0.16
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.31	7.88	0.00	0.00	0.83
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.16
13	0.00	0.00	0.00	0.70	0.25	0.95	3.52	1.41	1.49	0.00	0.00	16.9	0.00	0.00	0.00	0.04
14	0.00	0.00	0.00	0.33	0.08	0.37	0.21	0.58	6.34	0.00	0.00	4.35	4.93	0.16	0.00	2.19
15	0.00	0.00	0.00	0.00	0.00	0.37	0.04	0.08	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.16
16	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.08	0.00	0.00	0.00	0.16	0.91	0.12	0.74	0.21	0.00	0.00	2.24	0.04	0.04	0.00	6.59
%	2.06	0.00	0.00	1.11	1.44	17.1	4.09	5.20	9.77	0.00	0.00	33.6	13.8	0.71	0.00	11.1
%E	0.00	0.00	0.00	0.00	0.14	3.23	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.08	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
							Teacher no. 6									
2	0.00	0.00	0.00	0.07	0.11	0.56	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.00	0.11
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.07	0.00	0.00	0.03	0.11	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.94	0.26	0.00	0.00	0.00	0.00	0.00	0.79	0.00	1.57	0.00	0.36
7	0.00	0.00	0.00	0.00	1.69	33.9	0.11	0.19	0.04	0.11	0.00	0.71	0.00	3.94	0.00	2.21
8	0.00	0.00	0.00	0.00	0.04	0.15	0.19	0.00	0.00	0.00	0.00	3.21	0.00	0.15	0.00	0.07
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.19	0.00	0.15	0.00	0.07
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.04	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
13	0.52	0.00	0.00	0.07	0.34	1.27	2.44	0.00	0.00	0.00	0.04	5.81	0.00	2.10	0.00	0.64
14	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.30	0.00	0.00	0.19	0.67	4.28	3.00	0.07	0.00	0.07	0.00	0.00	0.00	12.6	0.00	1.54
16.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.07	0.00	0.00	0.00	0.52	2.14	0.07	0.15	0.00	0.00	0.00	0.45	0.00	2.10	0.00	2.74
%	1.00	0.00	0.00	0.36	4.42	42.9	5.81	0.48	0.15	0.37	0.04	13.3	0.15	22.7	0.00	8.24
%E	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00

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Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						Teacher no. 7										
2	0.00	0.00	0.23	0.07	0.46	0.74	0.00	0.23	0.00	0.00	0.00	0.23	0.00	0.08	0.00	0.11
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
4	0.00	0.00	0.89	0.00	0.08	0.15	0.00	0.19	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.08
5	0.00	0.00	0.00	0.04	0.04	0.11	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
6	0.00	0.00	0.00	0.00	1.44	0.08	0.04	0.08	0.00	0.00	0.00	1.75	0.00	1.40	0.00	1.71
7	0.08	0.04	0.00	0.00	1.51	18.9	0.04	0.85	0.04	0.00	0.00	0.39	0.04	0.89	0.00	1.82
8	0.04	0.00	0.00	0.00	0.27	0.19	0.23	0.04	0.00	0.00	0.00	2.99	0.00	0.15	0.00	0.11
9	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.50	0.00	0.00	0.00	1.16	0.04	0.11	0.00	0.27
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
13	1.20	0.00	0.11	0.11	1.01	0.74	3.07	0.08	0.00	0.00	0.08	14.6	0.00	0.46	0.00	0.93
14	0.04	0.00	0.00	0.00	0.00	0.08	0.00	0:00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.70	0.00	0.19	0.08	0.58	1.13	0.50	0.04	0.00	0.00	0.00	0.00	0.00	4.86	0.00	0.85
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.4	0.23
17	0.11	0.00	0.04	0.04	1.05	2.45	0.11	0.11	0.00	0.00	0.00	1.20	0.00	0.93	0.23	1.98
%	2.17	0.04	1.46	0.34	6.48	24.6	4.03	2.16	0.08	0.00	0.08	22.4	0.16	8.92	18.6	8.24
%E	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						Teacher no. 8										
2	0.00	0.00	0.85	0.44	0.81	1.29	0.08	0.69	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.16
3	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
4	0.36	0.00	0.24	0.00	0.32	1.05	0.00	0.36	0.00	0.00	0.00	0.40	0.00	0.20	0.00	0.08
5	0.65	0.04	0.00	0.24	0.57	0.89	0.00	0.12	0.00	0.04	0.04	0.77	0.00	0.00	0.00	0.08
6	0.00	0.00	0.00	0.00	1.09	0.04	0.00	0.12	0.00	0.00	0.00	3.69	0.00	1.13	0.00	1.05
7	0.08	0.00	0.00	0.04	2.64	23.6	0.00	1.70	0.00	0.04	0.00	3.25	0.00	0.49	0.00	1.70
8	0.04	0.00	0.00	0.04	0.04	0.28	0.00	0.12	0.00	0.00	0.00	2.07	0.00	0.04	0.00	0.04
9	0.00	0.00	0.00	0.00	0.04	0.61	0.00	0.16	0.00	0.00	0.00	3.29	0.00	0.00	0.00	0.49
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.12	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	3.45	0.00	1.66	2.43	0.89	2.84	2.31	0.57	0.00	0.12	0.04	3.94	0.00	0.08	0.00	0.44
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.16	0.04	0.24	0.24	0.40	0.81	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.12
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.04	0.00	0.65	1.66	0.12	0.69	0.00	0.00	0.00	0.85	0.00	0.24	0.00	14.2
%	4.74	0.12	3.03	3.43	7.53	33.1	2.67	4.57	0.00	0.24	0.08	18.8	0.00	2.67	0.00	18.4
%E	0.28	0.00	0.73	1.01	0.89	9.34	0.28	0.20	0.00	0.08	0.00	5.80	0.00	0.69	0.00	0.00

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Table 7.   (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
							Teacher no. 9									
2	0.00	0.00	0.08	0.17	0.29	1.04	0.08	0.08	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.04
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.08	0.00	0.00	0.00	0.21	0.33	0.00	0.04	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
5	0.21	0.00	0.00	0.00	0.37	0.79	0.00	0.21	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.04
6	0.00	0.00	0.00	0.00	0.58	0.04	0.00	0.00	0.00	0.00	0.00	6.32	0.17	0.12	0.00	0.33
7	0.04	0.00	0.00	0.00	3.09	22.9	0.08	0.71	0.17	0.00	0.00	1.38	0.08	0.12	0.21	0.96
8	0.04	0.00	0.08	0.00	0.04	0.12	0.12	0.00	0.00	0.00	0.00	1.71	0.00	0.04	0.00	0.04
9	0.00	0.00	0.00	0.04	0.08	0.21	0.00	0.21	0.00	0.00	0.00	0.75	0.04	0.04	0.08	0.12
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	1.67	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1.46	0.00	0.54	1.55	2.68	2.89	1.79	0.25	0.00	0.00	0.00	14.2	0.00	0.04	0.00	0.25
14	0.00	0.00	0.00	0.04	0.04	0.37	0.00	0.00	1.50	0.00	0.00	0.00	0.04	0.00	0.00	0.00
15	0.08	0.00	0.00	0.00	0.00	0.17	0.08	0.00	0.00	0.00	0.00	0.04	0.00	0.42	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.8	0.21
17	0.00	0.00	0.00	0.00	0.17	1.17	0.04	0.08	0.00	0.00	0.00	0.42	0.00	0.00	0.12	0.46
%	1.91	0.00	0.70	1.80	7.55	30.2	2.19	1.58	1.71	0.00	0.00	25.6	2.00	0.78	21.2	2.45
%E	0.33	0.00	0.46	0.88	4.31	11.0	0.33	0.08	0.00	0.00	0.00	5.14	0.08	0.25	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
							Teacher no. 10									
2	0.00	0.00	0.00	0.45	1.56	0.78	0.06	0.10	0.00	0.00	0.00	0.13	0.00	0.10	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.23	0.00	0.19	0.06	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
5	0.72	0.00	0.03	0.10	2.67	0.81	0.00	0.26	0.00	0.03	0.00	0.13	0.00	0.13	0.00	0.23
6	0.06	0.00	0.00	0.10	1.85	0.39	0.03	0.32	0.00	0.00	0.00	0.17	0.03	0.16	0.00	1.36
7	0.03	0.00	0.00	0.06	2.73	21.6	0.00	0.89	0.10	0.00	0.00	2.99	0.00	0.62	0.00	1.76
8	0.16	0.00	0.00	0.19	0.58	0.42	0.36	0.00	0.00	0.00	0.00	2.54	0.00	0.00	0.00	0.19
9	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.19	0.03	0.00	0.00	2.54	0.00	0.00	0.00	0.36
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.06	0.00	0.00	0.00	0.03
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	2.15	0.00	0.23	4.07	3.22	3.28	3.84	1.10	0.00	0.03	0.00	8.52	0.00	0.10	0.00	1.43
14	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.09	0.03	0.10	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.06	0.00	0.00	0.10	0.58	2.08	0.16	0.32	0.00	0.03	0.00	1.89	0.00	0.13	0.00	2.70
%	3.18	0.00	0.58	5.10	13.5	30.7	4.45	3.21	0.26	0.12	0.00	28.0	0.29	2.40	0.00	8.06
%E	0.19	0.00	0.32	0.88	2.60	18.1	1.20	0.36	0.00	0.00	0.00	8.75	0.00	2.24	0.00	0.00

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Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						Teacher no. 11[a]										
2	0.00	0.00	0.00	0.00	0.70	0.92	0.00	0.42	1.20	0.00	0.00	0.07	0.00	0.21	0.00	0.35
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
6	0.00	0.00	0.00	0.00	0.99	0.14	0.00	0.07	0.00	0.00	0.00	0.92	0.00	0.42	0.00	0.70
7	0.00	0.00	0.00	0.00	0.42	30.3	0.00	0.49	0.49	0.00	0.00	1.43	0.00	3.11	0.00	2.33
8	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.07	0.00	0.00	1.41	0.00	0.14	0.00	0.07
10	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.21	0.00	0.00	1.41	5.30	0.00	0.00	0.35
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	2.82	0.00	0.14	0.14	0.49	1.27	0.63	0.28	0.63	0.00	0.07	6.36	0.00	0.42	0.00	0.99
14	0.35	0.00	0.00	0.00	0.07	0.21	0.00	0.00	4.66	0.00	0.00	0.00	0.07	0.00	0.00	0.00
15	0.42	0.00	0.00	0.00	0.28	3.25	0.21	0.00	0.00	0.00	0.00	0.00	0.00	9.04	0.00	1.06
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.14	0.00	0.00	0.00	0.28	2.40	0.07	0.35	0.14	0.00	0.00	1.69	0.00	0.92	0.00	3.67
%	3.87	0.00	0.14	0.14	3.23	38.6	0.98	1.82	7.40	0.00	0.07	14.3	5.37	14.3	0.00	9.66
%E	0.63	0.00	0.00	0.00	2.47	11.1	0.14	0.14	3.88	0.00	0.07	0.99	0.00	0.78	0.00	0.00

[a]Record based on less than four complete teaching sessions.

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	.17
						Teacher no. 12										
2	0.00	0.00	0.20	0.10	0.75	0.92	0.03	0.55	0.00	0.00	0.00	0.03	0.00	0.27	0.00	0.03
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
4	0.03	0.00	0.27	0.00	0.20	0.24	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07
5	0.07	0.00	0.00	0.00	0.20	0.34	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.07
6	0.00	0.00	0.00	0.00	1.37	0.10	0.00	0.48	0.00	0.00	0.00	0.96	0.03	3.01	0.00	0.51
7	0.00	0.03	0.00	0.00	1.71	19.0	0.07	1.40	0.03	0.03	0.00	1.02	0.03	1.33	0.17	1.61
8	0.03	0.03	0.03	0.00	0.17	0.37	0.27	0.20	0.00	0.00	0.00	2.73	0.31	0.48	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.27	0.00	0.00	0.00	2.32	0.00	1.37	0.00	1.19
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.03	0.00	0.03
12	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
13	0.96	0.00	0.03	0.58	0.58	1.16	1.67	1.23	0.03	0.00	0.10	6.94	0.00	0.92	0.51	0.41
14	0.07	0.00	0.00	0.00	0.00	0.24	0.24	0.03	0.00	0.00	0.00	0.00	0.20	0.00	1.13	0.00
15	1.71	0.03	0.44	0.24	0.92	1.91	2.32	0.20	0.00	0.03	0.00	0.00	0.00	8.00	0.00	0.34
16	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.72	1.26	0.00	2.02	0.00
17	0.03	0.00	0.00	0.00	0.55	1.95	0.03	0.58	0.00	0.00	0.00	0.37	0.00	0.65	0.20	10.2
%	2.90	0.09	0.97	0.92	6.45	26.4	4.63	5.27	0.06	0.16	0.10	15.1	1.90	16.2	4.03	14.6
%E	0.00	0.00	0.00	0.07	0.20	3.25	0.07	0.17	0.00	0.07	0.00	0.24	0.00	0.17	0.00	0.00

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Table 7. (Continued)

Teacher no. 13

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	0.00	0.00	0.14	0.04	0.61	1.83	0.09	0.33	0.04	0.00	0.00	0.09	0.00	0.00	0.00	0.09
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
5	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.37	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
7	0.00	0.00	0.00	0.00	2.02	34.6	0.23	0.39	0.23	0.00	0.00	0.34	0.04	1.55	0.00	3.05
8	0.04	0.00	0.00	0.00	0.00	0.04	0.14	0.09	0.00	0.00	0.00	1.31	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.04	0.09	0.00	0.04	0.04	0.00	0.00	1.73	0.09	0.09	0.00	0.28
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.33	1.08	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	2.44	0.00	0.00	0.00	0.70	1.50	0.84	0.84	0.09	0.00	0.00	10.1	0.37	0.04	0.00	0.94
14	0.04	0.00	0.00	0.00	0.00	0.33	0.00	0.04	0.94	0.00	0.00	0.37	0.37	0.00	0.00	0.00
15	0.70	0.00	0.00	0.00	0.04	1.73	0.23	0.00	0.00	0.00	0.00	0.37	0.00	2.25	0.00	0.19
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.04	0.00	0.00	0.00	0.42	3.14	0.09	0.14	0.09	0.00	0.00	1.45	0.04	0.23	0.00	12.4
%	3.26	0.00	0.14	0.04	4.24	43.4	1.62	2.41	1.43	0.00	0.00	17.9	2.08	5.14	0.00	18.1
%E	0.00	0.00	0.00	0.00	2.16	1.41	0.00	0.00	0.00	0.00	0.00	0.09	0.00	1.17	0.00	0.00

Table 7. (Continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						Teacher no. 14[b]										
2	0.00	0.00	0.00	0.09	0.50	2.29	0.00	0.19	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	1.09	0.00	0.99
7	0.00	0.00	0.00	0.00	1.69	32.9	0.00	0.89	0.00	0.00	0.00	2.09	0.00	0.29	0.00	3.59
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.19	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.50
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	2.59	0.00	0.00	0.09	0.29	1.89	0.00	0.19	0.00	0.00	0.00	13.6	0.00	0.00	0.00	1.59
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.99	0.00	0.00	0.00	0.50	0.19	0.00	0.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.09
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.09	3.99	0.00	0.00	0.00	0.00	0.00	2.19	0.00	0.50	0.00	18.3
%	3.58	0.00	0.00	0.18	3.55	41.4	0.00	1.55	0.00	0.00	0.00	20.3	0.00	3.97	0.00	25.1
%E	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00

[b]Record based on less than four complete teaching sessions.