INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)” If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in “sectioning” the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.

University Microfilms International
300 N. Zeeb Road, Ann Arbor, MI 48106
18 Bedford Row, London WC1R 4EJ, England
HEILMAN, JAMES MICHAEL

COMMUNICATION CHARACTERISTICS OF A BEGINNING AND AN EXPERIENCED VOCATIONAL TEACHER AT A RESIDENTIAL SCHOOL FOR THE DEAF

The Ohio State University

Ph.D. 1980

University Microfilms International

300 N. Zeeb Road, Ann Arbor, MI 48106

18 Bedford Row, London WC1R 4EJ, England
COMMUNICATION CHARACTERISTICS OF A BEGINNING
AND AN EXPERIENCED VOCATIONAL TEACHER AT
A RESIDENTIAL SCHOOL FOR THE DEAF

DISSESSATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
James Michael Heilman, B.S., M.S.

* * * * * *

The Ohio State University
1980

Reading Committee:
Dr. L. H. Newcomb
Dr. James L. Collins
Dr. Patricia A. Looney
Dr. J. Robert Warmbrod

Approved By

Advisor
Department of Agricultural Education
ACKNOWLEDGEMENTS

The writer wishes to express his sincere appreciation to the following individuals whose assistance was of immeasurable value in the conduct of this study:

To Dr. L.H. Newcomb, Chairman of the reading committee and major advisor, for his support and counsel in the conduct of this study.

To Drs. James L. Collins, Patricia A. Looney, and J. Robert Warmbrod who served on the reading committee and whose advice and support were greatly appreciated.

To Dr. Sue Rose for her support and advice throughout the study.

To the writer's wife, Sue, and daughter, Barbara, goes a very special thanks, for without their help, understanding, and love, this study would not have been possible.
November 20, 1948 .......... Born - Dayton, Ohio

1971 .................... B.S., The Ohio State University, Columbus, Ohio

1972 .................... M.S., The Ohio State University, Columbus, Ohio

1973 .................... Consultant, The Ohio Department of Education

1973-1978 ............... Teacher, The Ohio School for the Deaf, Columbus, Ohio

1978-1980 ............... Graduate Research Associate, The National Center for Research in Vocational Education, The Ohio State University, Columbus, Ohio

FIELDS OF STUDY

Major Field: Agricultural Education

Studies in Agricultural Education. Dr. L. H. Newcomb

Studies in Research. Dr. J. Robert Warmbrod

Studies in Exceptional Children. Dr. James L. Collins and Dr. Patricia A. Looney
TABLE OF CONTENTS

ACKNOWLEDGEMENTS ....................................... ii
VITA ..................................................... iii
LIST OF TABLES ......................................... vi

Chapter

I. INTRODUCTION ........................................ 1
   Background and Setting ............................. 1
   The Problem ........................................ 5
   Objectives ........................................... 5
   Significance of the Problem ........................ 6
   Review of the Literature and Related Studies ......... 8
      Modes of Communication ........................... 9
      Classroom Communication .......................... 9
      Observation Techniques ........................... 16
      Language Theory ................................... 22
      Summary of the Literature ........................ 26

II. PROCEDURES AND METHODOLOGY ....................... 27
   Population and Sample ............................. 27
   Procedure ............................................ 28
      Modes of Communication ........................... 30
      Language Level .................................... 34
      Average Length of Utterance Units ................. 37
      Type-Token Ratio Values ........................... 38
      Interaction Analysis .............................. 38
      Summary ............................................ 42

III. FINDINGS ............................................ 43
   Introduction ......................................... 43
   Overview of Class Sessions ......................... 43
      Beginning Teacher ................................... 43
      Experienced Teacher ................................ 45
   Modes of Communication ............................. 47
      Beginning Teacher ................................... 47
      Experienced Teacher ................................ 49
      Comparison of the Two Teachers ................... 51
<table>
<thead>
<tr>
<th>Language Level</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Teacher</td>
<td>52</td>
</tr>
<tr>
<td>Experienced Teacher</td>
<td>54</td>
</tr>
<tr>
<td>Comparison of the Two Teachers.</td>
<td>54</td>
</tr>
<tr>
<td>Mean Length of Utterances</td>
<td>56</td>
</tr>
<tr>
<td>Type-Token Ratio Values</td>
<td>58</td>
</tr>
<tr>
<td>Beginning Teacher</td>
<td>58</td>
</tr>
<tr>
<td>Experienced Teacher</td>
<td>58</td>
</tr>
<tr>
<td>Comparison of the Two Teachers.</td>
<td>59</td>
</tr>
<tr>
<td>Categories of Communicative</td>
<td>60</td>
</tr>
<tr>
<td>Interaction.</td>
<td>60</td>
</tr>
<tr>
<td>Beginning Teacher</td>
<td>60</td>
</tr>
<tr>
<td>Experienced Teacher</td>
<td>62</td>
</tr>
<tr>
<td>Comparison of the Two Teachers.</td>
<td>62</td>
</tr>
<tr>
<td>Summary of the Findings</td>
<td>65</td>
</tr>
</tbody>
</table>

IV. SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS .......................... 67

The Problem ....................... 67
Procedure .......................... 67
Summary of the Findings .......... 70
Conclusions ........................ 71
Discussion ........................ 72
Recommendations ................... 82

BIBLIOGRAPHY .......................... 84
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Summary of Words and Utterances Used by a Beginning Vocational Teacher Over Various Types of Instructional Settings</td>
<td>44</td>
</tr>
<tr>
<td>2.</td>
<td>Summary of Words and Utterances Used by an Experienced Vocational Teacher Over Various Types of Instructional Settings</td>
<td>46</td>
</tr>
<tr>
<td>3.</td>
<td>Modes of Communication Used by a Beginning Vocational Teacher</td>
<td>48</td>
</tr>
<tr>
<td>4.</td>
<td>Modes of Communication Used by an Experienced Vocational Teacher</td>
<td>50</td>
</tr>
<tr>
<td>5.</td>
<td>A Comparison of the Mean Percentages of the Communication Modes Used by a Beginning and an Experienced Vocational Teacher Over Five Class Observations</td>
<td>51</td>
</tr>
<tr>
<td>6.</td>
<td>Level of Grammar Used by a Beginning Vocational Teacher</td>
<td>53</td>
</tr>
<tr>
<td>7.</td>
<td>Level of Grammar Used by an Experienced Vocational Teacher</td>
<td>55</td>
</tr>
<tr>
<td>8.</td>
<td>A Comparison of the Mean Percentages of the Grammar Level Used by abeginning and an Experienced Vocational Teacher Over Five Class Observations</td>
<td>56</td>
</tr>
<tr>
<td>9.</td>
<td>Mean Length of Utterances Used by a Beginning Vocational Teacher</td>
<td>57</td>
</tr>
<tr>
<td>10.</td>
<td>Mean Length of Utterances Used by an Experienced Vocational Teacher</td>
<td>57</td>
</tr>
<tr>
<td>11.</td>
<td>Type-Token Ratio Values for a Beginning Vocational Teacher</td>
<td>59</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>12.</td>
<td>Type-Token Ratio Values for an Experienced Vocational Teacher</td>
<td>60</td>
</tr>
<tr>
<td>13.</td>
<td>Categories of Communicative Interaction Behaviors Used by a Beginning Vocational Teacher</td>
<td>61</td>
</tr>
<tr>
<td>14.</td>
<td>Categories of Communicative Interaction Behaviors Used by an Experienced Vocational Teacher</td>
<td>63</td>
</tr>
<tr>
<td>15.</td>
<td>A Comparison of the Mean Percentages of the Categories of Communicative Interaction Used by a Beginning and an Experienced Vocational Teacher Over Five Class Observations</td>
<td>64</td>
</tr>
</tbody>
</table>
Background and Setting

Human communication is a complex system of interaction—a communication system that involves the transmission, reception, and processing of verbal and nonverbal information. Sanders (1976) has stated that the establishment of this system requires that communicating partners each: (1) possess a set of referents; (2) share a common set of symbols with which to identify these referents; and, (3) be familiar with the generative rules governing the manner in which the symbols may be arranged to construct patterns. These three requirements are attained by individuals through experience and interaction with objects and people in the environment.

From birth, individuals receive the necessary sensory inputs to acquire, comprehend, and maintain their verbal communication or language. It has been theorized that all children progress through fairly predictable states of language learning (Brown, 1973). Through interaction with adult language models, children internalize the general linguistic rules needed for the acquisition and comprehension of the language of the society in which they live. By the age of four, an individual knows most of the essential
patterns of verbal interaction (Vetter and Howard, 1971) and by puberty, has completed the attainment of adult language (Lenneberg, 1967). The ability to receive and process auditory information is critical in this language acquisition and development process.

Deaf individuals, by the nature of their handicapping condition, are denied clear access to the human voice and to other auditory stimuli present in the environment. If deafness is present at birth, children do not begin the process of language acquisition and expressive language development in the same way hearing children do. The inability to hear the human voice presents deaf children with major communication problems that follow them all through their lives.

In the academic setting, communication problems are greatly magnified for deaf students. Although deaf students generally test in the normal I.Q. range (Mindell and Vernon, 1971), they generally lag far behind hearing students in academic achievement (Furth, 1966; Gentile and Di Francesca, 1969; Meadows, 1975; and Trybus and Buchanan, 1971). Not only must deaf students attempt to learn subject matter as all children who hear normally do, but also they must attempt to learn it in an educational system predicted on the ability to use and understand a spoken and written language.

For over one hundred years, the education of deaf students has been the focus of many studies and the cause of
much academic controversy in the United States. A main issue has been how, rather than what, to teach these students. Educational programs have sometimes been founded upon particular philosophies of communication methodologies, e.g., oral only or oral plus manual. In addition to communication methodologies, different philosophies have been developed on alternative programming strategies for those deaf students who cannot function in a regular classroom setting. Some of the alternative program types include residential schools, day schools, schools for the multiply handicapped, and full or part time classes in local school districts.

Rawlings and Trybus (1978) conducted a national survey of the personnel, facilities, and services available in schools and classes for hearing impaired children in the United States. Some of their findings for the 809 respondents include the following: (1) there are approximately 69,000 hearing impaired students enrolled in various program types; (2) of the total number of academic teachers (8,926), the majority hold the bachelor's or master's degree and hold state certification in the education of the deaf; (3) the total number of full time vocational teachers is about one seventh the number of academic teachers; (4) compared to the academic teachers, substantially more use is made of vocational teachers who hold less than a bachelor's degree, although the majority of vocational
teachers do hold the bachelor's or master's degree; (5) a majority of vocational teachers do hold applicable teaching certificates; and (6) prevocational and vocational training is primarily available in residential schools.

Although most vocational teachers hold applicable vocational certificates, many are not certified to teach the deaf. Apparently, for employment purposes, emphasis is placed upon the teachers' vocational knowledge and not upon specialized skills for teaching deaf students in particular. It is assumed that a vocational teacher can acquire certain basic specialized teaching skills, e.g., use of sign language, through on-the-job experience or inservice training, or both. Because the deaf have great difficulty with language and because this difficulty presents teachers with unique problems in teaching and curriculum design, one may postulate that without formal training in deaf education, new vocational teachers may have difficulty in addressing these problems. These difficulties may persist throughout their teaching careers. Also, without formal training in deaf education, vocational teachers may not fully understand the personal and sociological implications of deafness and thus, they may begin teaching with a different set of attitudes and expectations than their academic counterparts. Because vocational teachers may be unaware of ways to deal successfully with language problems in the classroom, their language expectations for the students may be significantly
lowered over time. The lag in language development may be viewed as being too overwhelming for the teachers to address and thus, primary emphasis may be placed on the development of vocational skills. As there may be differences between vocational and academic teachers of the deaf, there may also be differences between beginning and experienced teachers in the way they structure and use language in the classroom. It is in this setting that the problem and objectives for this study have been developed.

The Problem

The problem investigated in this study may be stated as follows:

What are the communication characteristics of a beginning and an experienced vocational teacher at a residential school for the deaf?

Objectives

1. Describe the verbal language of a beginning and an experienced vocational teacher at a residential school for the deaf in terms of:
   a. modes of communication used
   b. language level of utterances used
   c. mean length of utterances used
   d. type-token ratio values
   e. patterns of communicative interaction
2. Describe the similarities and differences between a beginning and an experienced vocational teacher of the deaf in terms of their verbal output.

Significance of the Problem

For people to function successfully in all areas of society, they must be able to communicate with others. Many deaf individuals, because of their handicapping condition, have extreme difficulty in understanding and in being understood by the majority of the members of the larger society in which they live. This communication problem has been a serious obstacle to their access to and meaningful participation in the world of work. Two studies, for example, have indicated that deaf persons have a lower rate of job advancement and salary increases than hearing persons for comparable levels of employment (Guilfoyle, 1973; Reich and Reich, 1974). Thus, there is a critical need to better prepare deaf persons for the labor market.

Vocational education can play a major role in employment preparation. Emphasis, however, must be placed on job-related skills as well as on task performance skills. The importance of job-related skills for all persons was indicated in a study conducted by O'Neil (1976). In this study, some 300 persons helped to reduce a tentative list of 500 "occupational survival" skills to 27 basic categories. A representative sample of 589 workers then judged the relative
importance of those skills. From this study, it was concluded that task proficiencies are not as important in "occupational survival" as general qualities of performance. Some of these major qualities include: being dependable, managing time and materials efficiently, and knowing what is expected. For the deaf to be employable in an increasingly competitive labor market (where many of the traditionally unskilled jobs normally available to the handicapped are disappearing), their job survival will depend on communication skills. Present practice, however, suggests that language development may not be emphasized in vocational classrooms for deaf students because apparently many of the vocational teachers do not have specialized training for teaching the deaf. These teachers are trained to teach in the regular classroom, but as Sheppard and Vaughn (1977) have indicated, many vocational teachers are discovering that methods used in regular vocational classrooms are not always effective when teaching disadvantaged and handicapped students.

Because language development is so important for deaf students, it is essential to study how language is structured and used in the vocational classroom. The assumption underlying any study of teacher language is that verbal output directly affects not only the verbal development of the students in the classroom, but also other behaviors. For deaf students a quality verbal model is crucial.
To date, little research has focused upon vocational teachers of the deaf. Before questions of preservice and inservice needs can be addressed, a detailed description of what the vocational teacher as communicator presents to the students must be made. This detailed description must be established before any discussion or analysis of cause/effect relationships can be undertaken. The information from this description can then be examined from the perspective of the teacher, not the student, as communicator. Also, by looking at the language of a beginning and an experienced vocational teacher of the deaf, the role and value of on-the-job experience can be considered in an ancillary way. Therefore, to provide the foundation for a descriptive knowledge base, this study has been undertaken.

Review of the Literature and Related Studies

In establishing a conceptual framework for this study, the researcher noted the need to conduct a study to describe the verbal output of vocational teachers of the deaf. To facilitate the conduct of this study the literature was reviewed: (1) to identify the different modes of communication used in classrooms for the deaf, (2) to report studies pertaining to the advantages, disadvantages, and relative effectiveness of the various communication modes, (3) to identify the various methods of observing teacher communication patterns used in the classroom, (4) to report studies
pertaining to teacher communication patterns in classrooms for the deaf, and (5) to identify the various methods of describing language.

Modes of Communication

A variety of communication methods is used in classroom for deaf children. This variety has resulted from a general disagreement among educators and researchers on the most appropriate communication method to use in educating these children. Brill (1970) refers to this long standing disagreement in the field of deaf education as the "One Hundred Years War". He states that it is characterized by emotionalism on the part of parents and teachers, by a lack of precise thinking, and by a lack of perspective in regard to the appropriate relationship between means and end.

Until recently, most deaf children in the United States were taught by "oral only" communication methods. The term "oral communication" means the teaching of speech as an expressive mode and speechreading (lipreading) as a receptive mode. Any use of manual communication is excluded. Many times deaf children have problems with the oral method of communication. Because of the lack of auditory feedback, many deaf persons have difficulty in developing and using speech as a primary means of expressive communication (Lenneberg et al., 1965; Huntington et al., 1968). Likewise, using speechreading for receiving communication is not an easy task, because only about 33 percent of human
speech sounds is visible on the lips (Hardy, 1970). Because the percentage of information visible on the lips is slight, speechreaders must fill in the "gaps" based upon their experiences and understanding of the structure of the English language. Gaining this understanding is difficult for deaf individuals because of the lack of the clear access to the human voice. Charrow and Wilbur (1975) point out that it takes certain talent to lipread, and there is no evidence to support the belief that deaf individuals are any more talented at lipreading than hearing individuals. With respect to deaf individuals, Jeffers (1967) notes a wide range in lipreading ability. The major point, which is frequently misunderstood by many people, is that not all deaf individuals are "natural" lipreaders.

In some educational programs, deaf students are taught by the Rochester Method (Scouten, 1967). This method combines speech with the simultaneous use of fingerspelling. Fingerspelling consists of 26 distinct hand shapes formed by the fingers on one hand. Each shape corresponds to one of the 26 letters in the English alphabet. Quigley (1969) concludes that the achievement levels of students in schools using fingerspelled English are higher than those of the students in schools using a sign system plus fingerspelling.

In other educational programs for deaf students, manual communication systems called "Manual English" and "Signed English" are used. Manual English systems attempt to
duplicate in signs the morphological systems of the English language. Use is made of American Sign Language (ASL) signs and specially devised signs not found in ASL such as word endings (e.g., -ing, -ed). Examples of Manual English systems are as follows: "Seeing Essential English" (Anthony, 1971), "Signing Exact English" (Gustason, Pfetzing, Zarvolskow, and Norris, 1972), "Systematic Sign Language" (Paget and Gorman, 1969), and "Linguistics of Visual English" (Wampler, 1971). Signed English (Bornstein, 1973) refers to the use of American Sign Language signs placed in English word order. Fingerspelling is used for those words that do not have signs.

A growing trend in many education programs is to combine the use of manual systems, speech, and fingerspelling. This method is frequently termed "total communication". Research tends to support the notion that educational achievement is enhanced through the use of total communication (Moores, Weiss, and Goodwin, 1973; Vernon and Koh, 1970).

Finally, a communication system seldom used by classroom teachers of the deaf in the classroom setting is American Sign Language (ASL). Charrow and Wilbur (1975) indicate that few hearing teachers know how to use ASL and those who do are hampered in using it by their own biases against it, as well as by educational policies that prohibit its use in the classroom. Even though ASL is seldom used in the classroom, it is widely used by deaf students outside.
It is estimated that approximately 500,000 deaf individuals use ASL as their primary language, making it the third most widely used non-English language in the United States (Charrow and Wilbur, 1975). Until recent years, most people considered ASL to be nothing more than handwaving and gesturing—a non-language. It has been shown, however, to have the properties of a true language i.e. creativity, language use, displacement, and language learning (Wilbur, 1976), yet its structure is different from that of the English language (Bonvillian, Charrow and Nelson, 1973). For example, ASL does not include articles, the verb "to be", or infinitives (Fant, 1972).

Researchers have found that ASL is acquired by deaf children of deaf parents in much the same manner as any spoken language is acquired (Bellugi and Klima, 1972). For these children, ASL could be considered their native language and English a second language (Charrow and Fletcher, 1974). With regard to academic achievement, studies have shown that prelingually deaf children with early sign language communication do consistently better in all school subjects, including English, than comparable deaf students with only oral communication experience (Vernon and Koh, 1970; Brasel and Quigley, 1977). As ASL gains more acceptance as a true language, its use in the classroom will probably increase.
White and Stevenson (1975) conducted a study to determine the method of communication through which deaf students assimilated the most information. A stratified random sample of deaf students ranging in age from 11.0 to 18.7 and in I.Q. from 60 to 140 was drawn from two residential schools for the deaf. Equated materials were presented to the students through oral communication, total communication, manual communication, and reading. The findings indicated that deaf children can assimilate more information through methods of communication which employ some kind of manual component. The findings also indicated that no differences existed between "lower functioning" students, the "average", and the "bright" students in their ability to assimilate information through oral communication; however, through total communication, manual communication, and reading, the average and bright students did significantly better than the lower functioning students. From this finding, the researchers concluded that the instruction of average and bright deaf students through oral communication will result in the assimilation of significantly less information than these students are capable of learning. Another finding of the study was that the addition of speech to manual communication did not significantly increase students' ability to assimilate information. Based on this finding, the possibility is raised that students in the process of shifting their focus from speech to the manual component lose some
information. In conclusion, the researchers stressed the importance of a "quality-quantity" linguistic input for deaf students.

Jordan, Gustason, and Rosen (1976) conducted a national survey of the communication methods used in schools and classes for the hearing impaired. Recent changes in the use of particular modes were also investigated. For the purposes of their study four communication methods were defined: oral/aural, Rochester, total communication, and cued speech (a system of hand cues used together with speech for speechreading facilitation). Three hundred and forty three of the 769 programs (or 43%) that responded to their survey reported a change in the methods of communication used. Of those 343, 302 reported changing from the oral/aural method. Also, of those 343 programs, 333 reported changing to total communication. The use of total communication in all reporting schools and classes was 64 percent (64%).

Jenesma and Trybos (1978) investigaged the various means of communication used between teachers and hearing impaired students as well as between these students and their parents. For their survey, they identified six categories of communication modes: speech, signs, fingerspelling, gesturing, cued speech, and other. Teachers reported their frequency of usage for each mode as either "never", "sometimes", "usually", or "always". The survey results for 657 teachers indicate
that speech is the method most often reported as "always" used, followed by the use of signs. The use of speech alone, however, accounted for only eleven percent (11%) of the total teacher to student communication. The use of speech as part of the communication act was 80.6. The use of signs as part of the communication pattern was 61.7 percent. When the interrelationships of the various modes were examined, the researchers found that when the use of speech was high, the use of signs or fingerspelling was low and vice versa. The findings of the study also indicated that differences existed in the typical communication patterns at the various types of programs for the deaf. Programs conducted by local school districts (full-time special classes, part-time special classes, itinerant programs, and resource room programs) tend to use more speech, while residential schools, tend to use more signs. The researchers note that these communication differences may be due to the differences in the students attending the different programs and not the result of school policy. Based on the findings of their study, the researchers concluded that there is much variation in the communication patterns employed with hearing impaired students and that a combination of modes rather than a single method is the rule in the classroom.
Classroom Communication Observation Techniques

The communication interaction that occurs in the classroom between teachers and students has been an area of growing interest in educational research that has resulted in the development of a wide range of interaction observation instruments. Brooks and Friedrich (1970) found over one hundred and forty instruments in their study while Simon and Boyer (1974) reported ninety-nine instruments in their anthology.

In the literature, two general approaches have been developed to describe observational instruments, category and sign. The category system differs from the sign system in that it: (1) selectively relates behaviors to one dimension; (2) provides an exhaustive and non-overlapping set of categories for recording responses along this dimension; and (3) sets specific time intervals for recording that behavior.

In a critical review of these communication interaction observation techniques, Babich and Scafe (1979) discuss the categorization of these instruments from the behavior perspective: behavioral "descriptive", "message functional", and "cognitive/affective". With the behavioral descriptive instruments the primary emphasis is on a low inferential description of communication acts. A non-evaluative, descriptive notation of what behaviors are performed by the teacher or student or both is made with no attempt to
determine the implications of the behaviors. The second category of instruments is the message functional. The intention of the communication act is the focal point of this type of instrument. This means that presumptions are made about how an individual may be using a particular communication act. The third category of instruments is called the cognitive/affective. These instruments provide interpretations or inferences about what various communication behaviors represent (e.g. knowledge or feeling states) instead of describing what occurs. Based on the review of these types of instruments, the authors listed three recommendations concerning the selection of an observational technique: (1) both verbal and non-verbal behaviors can be considered; (2) the same set of categories can be used for any participant in the communication exchange (e.g. student and teacher); and (3) the message functional approach is stressed in the category design.

Biddle and Adams (1967) describe behavioral observation as a four step process: (1) freezing the data (recording the data), (2) converting the data (coding the data), (3) analyzing the data, and (4) interpreting the results. They state that the collection of the behavioral record and the quantification of the record are distinct steps in the observation process. They also point out that each of the four steps in the process should be carried out independently and to the greatest extent should be mechanized. They
suggest the possibility of data "contamination" if the behavioral record is collected and coded simultaneously. The use of videotapes is suggested to provide an impartial, more detailed, and reliable record. Once the videotapes are made, the authors state that the codification can be performed at the investigator's leisure and because the behavior sequences can be played back over and over, the codification may tend to be done more reliably.

Samph (1968) conducted a study to determine whether the presence of an observer has an effect on the verbal behavior of teachers and if so, what the nature of that effect is. Ten teachers were observed under four experimental conditions: (1) teachers not informed of an observation and no observer present in the classroom; (2) teachers informed of observer prior to its occurrence and an observer present in the classroom; (3) teachers informed of an observation and no observer in the classroom; and (4) teachers not informed of an observation prior to its occurrence and an observer present in the classroom. Flanders' System of Interaction Analysis was used to code the recorded teacher verbal behaviors. Analysis of the data indicated the existence of an observer effect. Teachers became more "indirect" when an observer was present in their classrooms, whether they were informed of an observation prior to its occurrence or not. The teachers in this study used more "praise", "acceptance of student ideas" and less "criticism"
when being observed. Prior notification of observations by itself had no effect on a teacher's classroom performance. When prior notification was followed by an observer's presence, teachers decreased their use of "criticism". From the findings, it was concluded the presence of a classroom observer lead to changes in a teacher's verbal behaviors.

Craig and Collins (1970) developed one of the first observation systems for use in classrooms for deaf children. It was designed to determine recurring communication patterns in all modes of communication (spoken, written, non-oral) that deaf students and their teachers use. Other instruments generally report only on spoken or written language or both. The Craig-Collins system was based upon the Flanders System which was expanded from ten to twenty descriptive categories. In addition to the twenty categories of communication, eleven categories for modes of communication were developed, including the nonlanguage modes of kinesthetic, demonstration, dramatization, and evasive action. Using this system, the researchers gathered data on communication patterns in classrooms for deaf students at all age levels and in all instructional areas at three schools. A major finding was the preponderance of teacher-initiated communication at all age levels and in all formal subject areas. "Questioning" and "informing" were the two most frequently observed categories in language-dependent
and specialized instruction areas. In informal class activities, "teacher demonstration" and "teacher directing" were the categories most frequently observed at the primary level. "Teacher directing" was the category most used at the high school level except for the "no communication" category which was recorded almost half of the observed time. In formal classes the oral and combined modes were most frequently observed. During informal activities, demonstration, gesture, combined mode, and oral were the categories most frequently observed. Craig and Collins raised several questions as a result of the study: (1) Do deaf students lack the communication ability necessary to initiate a greater proportion of the communication or are they not given the opportunity to initiate such communication by their teachers? (2) What methods or types of interaction can best be emphasized to encourage more expressive communication on the students' part?

Collins and Rose (1976) conducted a study to collect data on communication interactions at a high school for deaf students with an open school environment. The purpose of communication behavior was the variable of interest; therefore, the modes of communication were not reported. Observations were made in three academic areas: English, mathematics and social studies. The Craig-Collins system was used to collect data in teaching/learning situations where the teacher might be considered the focal point or
leader of the activity. In situations where there was no traditional "teacher talks-student listens" format, the Pittsburgh Revised Interaction Analysis System developed by Craig and Holman (1973) was used to collect data on the communication patterns which occurred when individual students were being observed. Results indicated that in an open environment of instruction, students were observed to exhibit task-related behavior during 75 percent (75%) of classroom time. During group instruction, students were observed to be more active participants in the communication process (teacher talk 42%, student talk 46%) when compared to deaf high school students in traditional school environments (teacher talk 77%, student talk 10%). Collins and Rose indicated that if the development of communication is a critical variable in the education of deaf students, then a more active role by the students in the interactive process seems necessary.

Wolff (1977) used the schedule, A Cognitive Verbal Non-Verbal Observational System (CVNV) to observe classroom interaction patterns and gather data about the cognitive levels at which the interaction generally seemed to occur. The CVNV Schedule was based on a reduced version of the Craig and Collins schedule. Cognitive level indicators based on Piaget's level of development were added. The CVNV was applied to videotapes made in randomly chosen classrooms of teachers who participated in a New York
Title I project. Wolff reported that teachers of the deaf were less directive than public school teachers, and as their indirective skills improved, their classes communicated more.

Language Theory

During the past fifteen years, much of the research in linguistics has been conducted in the theoretical framework of transformational generative grammar developed by Chomsky (1957, 1965). In Chomsky's view of grammar (the set of rules for combining rules into sentences), the sentences of a given language consists of the following components: (1) deep structure, which refers to the level at which all grammatical relationships are determined; (2) surface structure which is the actual form of the sentence produced through speech, signs, or written modes; (3) semantical rules, which interpret and generate the meaning in the deep structure; (4) phrase structure rules, which determine the grammatical relationships represented in the deep structure; (5) transformational rules which relate the deep structure to the surface structure representation; (6) leximes or words; (7) morphological rules which determine the final sequencing and form of the morphemes (smallest units which convey meaning) in the surface structure e.g., verb tense and plurals; and (8) phonological rules which relate to the appropriate pronunciation of the sentence.
The theory of transformational grammar attempts to explain how native speakers of a language are able to generate new utterances which they have not previously encountered; it also attempts to explain how sentences differing in their syntactic structure (word order) may be closely related semantically.

With regard to language functioning, it is important for a person to learn to recognize the deep structure particularly as sentences increase in their complexity. This recognition involves an understanding of the transformational rules which relate the deep and the surface structure. Research by Quigley et al. (1976) has shown that deaf students have great difficulty in understanding the relationship between the two structures. Deaf students tend not to use deep structure, but are dependent upon surface structure functioning. Thus, many deaf students have more difficulty in understanding complex transformations.

One approach to addressing the language difficulties of deaf students is the concept of language building. Language building is an outgrowth of transformational grammar and structuralistic theories. With this approach, the grammar of language is viewed as consisting of "kernel" sentences (Braine, 1963) or basic sentence patterns which serve as the basic components for constructing complex sentences. This construction is done through various transformations to the kernel sentences. The goal of this approach as a
language development strategy is to help the deaf child acquire these kernel sentences needed to develop the complex sentences. Blackwell et al. (1978) and Looney (1978) have developed curriculum strategies which incorporate the "kernel" sentence approach to language assessment and development for deaf children. In addition, Looney (1978) has developed a "phrase structure--transformational" checklist which can be used to assess both the students' and teachers' language.

Other methods of describing language have been in existence prior to the emergence of Chomsky's theory. Traditionally, the structure of the English language was described in terms of "traditional" or "school" grammar. Traditional grammar is termed "prescriptive" because it focuses upon what one should or should not say. Studies using this approach were in the form of diary studies which described words acquired and used (Leopold, 1949). Beginning in the early 1950's, a different linguistic theory emerged. This theory is called structural or descriptive grammar. The focus of this grammar theory is on usage, and, therefore, is descriptive in nature. Research studies have examined the acquisition of phonemes, morphemes, and surface structure frames (Braine, 1963; Berko, 1958; and Looney and Rose, 1979).
Two methods of describing language which are rooted in structuralist theory are sentence length and type-token ratio. Sentence length has been used to study level of language development and complexity of sentences used. Brown and Bellugi (1964), for example, as a result of studying the acquisition of child language, found that when adults address children, the sentences are short and simple in construction. Simons (1962) and Myklebust (1964) found that deaf students do not attain the average sentence length of eight year old hearing children until they are 17 years old. Type-token ratios have been used to study vocabulary flexibility. A type-token ratio (TTR) represents the relationship between the number of different words used in a sample of language and the total number of words in the sample. The lower the TTR the fewer number of different words used. A low TTR indicates a restricted or repetitious vocabulary. Philips (1973), found that TTR of adults when addressing small children is generally reduced. In a study of deaf and hearing children's TTR, Simons (1962) found that deaf children have lower TTR's than hearing children. Tervoort (1967) however, found that the TTR for deaf students increased with age indicating increasing language flexibility.
Summary of the Literature

Based on the review of the literature the following observations have been made:

(1) There are a variety of communication modes used in classrooms for deaf students.

(2) The simultaneous use of speech, sign language, and fingerspelling (total communication) is the growing trend in classrooms for deaf.

(3) A manual mode may facilitate the learning of information by deaf students.

(4) The survey method of research has been a primary means of studying the modes used by teachers of deaf students. Studies have not tended to study modes on a word by word basis but instead on the percent of time used.

(5) Few studies have examined the communication patterns existing in classrooms for deaf children.

(6) The studies of communication patterns in deaf classes have been conducted using live observation techniques.

(7) Phrase structure - transformational grammar, sentence length, and type-token ratios could be appropriate methods of describing vocational teachers' of the deaf verbal output.
CHAPTER II
PROCEDURES AND METHODOLOGY

Population and Sample

The subjects of this study were two of the sixteen vocational teachers employed at a state residential school for the deaf located in the midwestern section of the United States. This school offers a comprehensive educational program for deaf students from kindergarten through twelfth grade. At the time this study was conducted, the total student population of the school was approximately 300.

The two vocational teachers were selected on the basis of teaching experience with deaf students and the ability to use manual communication. One teacher had taught seven and one half years at the school and was considered by the other teaching staff and by the administrators to be one of the school's more proficient users of manual communication. The other teacher was a first year employee at the school and, until taking this position, had had no prior formal classroom teaching experience with either deaf or normally hearing students and no experience with manual communication. At the time this study was undertaken, this teacher had completed teaching the first semester of the school year (approximately ninety days) and had acquired some basic
manual communication skills through on-the-job experience and inservice training. The beginning teacher, however, was not considered to be as proficient in using manual communication as the experienced teacher.

Regarding certification, each teacher held a state vocational teaching certificate. Neither teacher, however, held any certification for the education of the deaf because neither one had completed any college course work in this area. (The employment policy at this school, as with most schools for the deaf, did not require vocational teachers to hold certificates for deaf education.)

Procedure

To accomplish this study's objective, a multi-faceted description of the two teachers' verbal language was necessary. Therefore, the use of videotape recording equipment, in lieu of the use of live observational techniques, was chosen as the most appropriate means of collecting data.

Beginning with the second semester of the school year, five class sessions for each teacher were videotaped using a Sony portable videotape recorder and black and white camera. The recordings were sequenced over the semester with a one month interval between each taping. Both teachers were recorded on the same days; the experienced teacher was always taped during the first class period, and the beginning teacher was always taped during the second
period. In general, class periods lasted forty to forty-five minutes. For the purpose of this study, the videotape recording equipment was not started until the teachers began their classes. Therefore, any informal conversations that occurred between the teachers and their students before classes began were not recorded.

The students in the classes of both teachers were at the junior high level and enrolled in these vocational classes as part of the school's prevocational/exploratory program. Each new semester, students enrolled in this program select a different vocational class to attend. This study coincided with the beginning of the second semester, so each teacher had a class of new students. Generally, seven students were present in each class at the time each recording was made.

For each of the ten videotape recordings, a written transcription of the verbal language used by the teacher during the entire class session was made. The verbal language was reported as leximes (words). For the purpose of this study, the students' language was not transcribed.

As the tapes were being transcribed, utterance boundary markers (indicated as vertical lines) were drawn between the words to designate the segmentation of sequences of words into utterance units. Utterance units consisted of single words or groups of words that were used to convey or express complete thoughts. Repeated words or phrases were counted
as separate utterance units in the transcripts. Utterance boundary markers were also used to indicate those points in the transcripts at which the teachers' "talk" was interrupted or immediately followed by students' communication. In the transcripts, however, the students' words were not recorded.

Once the words were transcribed and segmented into utterance units, the following five types of data were collected: (1) the mode in which each word was expressed; (2) the language level of each utterance unit; (3) the average word length of each utterance unit; (4) type-token ratio values; and (5) the communicative intent of each utterance unit as determined by a communicative interaction analysis system.

Modes of Communication

Objective 1.a of this study was to describe the verbal language of a beginning and an experienced teacher in terms of the modes of communication employed to express each word used.

To accomplish this objective, all of the words in all ten transcripts were individually coded to indicate the modes used to express them. This coding process was done while viewing the videotapes. For the purpose of this study, the modes of communication were coded and defined as follows: (1) "oral only" (0) -- the teacher only spoke the word;
(2) "oral plus sign" (OS) — the teacher spoke and signed the word simultaneously; (3) "sign only" (S) — the teacher only signed the word; (4) "oral plus fingerspelling" (OF) — the teacher spoke and fingerspelled the word simultaneously; (5) "fingerspelling only" (F) — the teacher only fingerspelled the word; (6) "writing only" (W) — the teacher wrote the word on a chalkboard or a piece of paper; (7) "oral plus writing" (OW) — the teacher spoke and wrote the word simultaneously; and (8) "oral plus uncodable" (O?) — the teacher spoke the word, but because of the camera angle, the use of another mode could not be determined. An example of how a coded utterance would appear is illustrated as follows:

/The box is on the table/

O OS OS S O OF

For the purposes of this study, the following ground rules, which were modifications of the rules developed by Hoffmeister, Moores, and Ellenberger (1975) for translating sign language, were used during the coding process:

(1) fingerspelling was transcribed with hyphens between the letters, e.g., d-o-g. The total words, not the individual letters, were treated as units for coding purposes, e.g., d-o-g; (2) a word was coded "oral plus fingerspelling" when the word was spoken and either partially or completely fingerspelled. For example, if the teacher spoke the word "running" but only spelled "run", the word would be
transcribed as "running" and coded "OF". Incomplete spellings coinciding with speech were counted similarly. If, however, the teacher used the "fingerspelling only" mode, only what was spelled was transcribed; (3) a fingerspelled letter(s) indicating proper names was transcribed as capital letters and counted as one unit; (4) numbers used in counting were counted as separate units; (5) contractions were counted as one unit; (6) compound signs were counted as one unit. For example, the word "today" can be signed as "now" "day". These two words would be treated as one unit; and (7) if a teacher spoke a word but used the wrong sign to represent it, each word was treated as a separate unit.

When each word had been coded, the frequency and percentage of usage for each mode category was calculated for each session and for each teacher. Also, the mean frequency and percentage for the five sessions of each teacher were calculated.

Coding Agreement

To indicate the reliability of the codification of modes of communication, a percentage of agreement between the codification of the researcher and another code was calculated. (It should be noted that the researcher coded all ten transcripts before any coding agreement checks were made.) The researcher's codification was considered to be the standard, and the other coder's results were checked for
the number of times that they were in agreement with this standard. Before this procedure is described in more detail, the qualifications of the researcher and the other coder for coding the communication modes will be presented. The researcher was a teacher at a residential school for the deaf for five years, had graduate level training in deaf education and sign language, and is proficient in the use of sign language. The other coder is an assistant professor of deaf education and a licensed interpreter of the deaf.

The first step in generating the percentages of coder agreement was to draw a sample of one hundred continuous words from each of the ten transcripts. The starting point of the sample in each transcript was determined by using a table of random numbers. The total number of feet on each videotape (e.g., 575) was considered to be the range of possible numbers (e.g., 1 thru 575) which could be randomly drawn from the table. Ten numbers were drawn from the table, one for each tape. The selected place on each tape was located in each transcript. From that place in the transcript the next one hundred words were used for the sample. In some cases the numbers drawn at random corresponded to footage near the end of the tape. In those cases, there was not a total of one hundred words left on the transcript. Therefore, this sample was continued and subsequently completed by going back to the beginning of the transcript and continuing until one hundred words had been collected. The one
hundred words from each transcript were retyped; boundary markers were included but the researcher's codification was not indicated.

These ten samples were then coded by the other coder while viewing the videotapes. The coder used the categories that have been outlined in this chapter. The coder was not limited to the number of times the videotapes could be viewed. The order in which the tapes were coded was determined at random by the coder. After four tapes had been completed by the coder, the average agreement between the coder and the researcher was 94.5 percent. Because of this high percentage of agreement, no more tapes were coded.

Language Level

Objective 1.b of this study was to describe the verbal language of a beginning and an experienced teacher of the deaf in terms of the level of language used.

To accomplish this objective all of the utterance units in all ten transcripts were coded according to three levels of language: (1) fragment; (2) phrase structure; and (3) transformation.

An utterance unit was coded "fragment" if it was a single word or an incomplete sentence.

An utterance unit was coded "phrase structure" if it was a sentence which began with a noun phrase and had one and only one main verb. Example construction follow:
(NP = Noun Phrase; V_i = Intransitive Verb; V_t = Transitive Verb; V_e = Verb "to be"; ADV = Adverb; and ADJ = Adjective)

1. NP_1 + V_i + (ADV)
   The boy ran. The boy ran home.

2. NP_1 + V_t + NP_2 + (ADV)
   The student wrote the story.
   The student wrote the story at school.

3. NP_1 + V_e + ADJ (ADV)
   John is tall. John is at home.

4. NP_1 + V_e + NP_2 (ADV)
   Mr. Smith is a doctor.
   Mr. Smith is a doctor in New York.

An utterance was coded "transformational" if it contained any of the following transformational rules:

1. Deletion of NP_1 (imperative)
   Give that to me.

2. Verb expansion (addition of auxiliary verb or negative or both)
   I will go home.
   I can't go home.
   I will not make that.

3. Conjunction (and, so, because, but, or)
   Jim and John bought the food.
   Jim saw Mary and waved to her.
   He was sick so he called the doctor.
4. Permutations (e.g., passive sentence)
The car was driven by Paul.

5. Interrogatives (transposing, substituting)
Will Mary go to school?
Who broke the window?

When each utterance unit had been coded, the frequency and percentage of usage for each language level category were calculated for each session and for each teacher. Also, the mean frequency and percentage for the five sessions of each teacher were calculated.

Coding Agreement
To indicate the reliability of the codification of levels of grammar used, a percentage of agreement between the codification of the researcher and another coder was calculated. (It should be noted that the researcher coded all ten transcripts before any coding agreement checks were made.) The researcher's codification was considered to be the standard, and the other coder's results were checked for the number of times that they were in agreement with this standard. Before this procedure is described in more detail, the qualifications of the researcher and the other coder for coding the communication modes will be discussed. The researcher had graduate level training in language development and assessment of the deaf. The other coder was an assistant professor of deaf education. (A different coder was used for this agreement check.)
A sample of fifty continuous utterance units was drawn from each of the ten transcripts. The starting point of each sample was the same starting point used for the mode samples. If fifty units could not be drawn at the end of the tape, the sample was continued and completed by starting at the beginning of the transcript until fifty units had been collected. The fifty utterance units from each transcript were re-typed; the researcher's codification was not included.

The ten samples were coded by the other coder. The coder used the categories for grammar level that had been discussed in this chapter. The coding process was not done while viewing the videotapes. The mean percentage of agreement between the coder and the researcher for the ten samples was 91.4 percent. The percentages ranged from 84 percent to 96 percent for individual tapes.

Mean Length of Utterance Units

Objective 1.c of this study was to describe the verbal language of a beginning and an experienced vocational teacher of the deaf in terms of average length of utterances used.

To accomplish this objective, the total number of words on each transcript for each teacher was divided by the total number of utterances for each transcript. A mean utterance length was calculated for the five sessions for each teacher.
Type-Token Ratio Values

Objective 1.d of this study was to describe the verbal language of a beginning and an experienced vocational teacher of the deaf in terms of type-token ratios.

To accomplish this objective a type-token ratio was calculated for each session of each teacher. A type-token ratio was calculated by dividing the total number of different words used in each transcript by the total number of words used in each transcript. A mean type-token ratio was calculated for the five sessions for each teacher. In addition, a total type-token ratio was calculated for the total five sessions by combining the total number of different words used by each teacher for the five sessions and then dividing this number by the total number of words used over the five sessions.

Interaction Analysis

Objective 1.e of this study was to describe the verbal language of a beginning and an experienced vocational teacher of the deaf in terms of an interaction analysis schedule. Because the intent of the communicative act was the focal point of this objective, the Observational System for Instructional Analysis (OSIA) (Hough and Duncan, 1975) was selected. The OSIA schedule consists of thirteen categories used to classify communicative acts of teachers and students.
For the purpose of this study, only categories 4-12 were used. Categories 1-3 represent non-communicative behavior, and thus were not applicable for this study. Category 13, instructionally nonfunctional, was not used because all of the teachers' language was considered relevant to the study. In addition, for the purpose of this study, the categories were not further distinguished as being substantive or managerial in nature, a possible level of categorization for each of the categories in this system.

All of the utterances, as determined by the utterance boundary markers on all ten videotape transcripts, were coded using the OSIA categories 4-12. This coding was done while the researcher viewed the videotapes.

The OSIA categories 4-12 are defined as follows:

Category 4: INITIATING = Any nonappraisal behavior that presents substantive or managerial information to another or others. This behavior may be an expression of knowledge and/or an expression of feeling states or values preferences.

Category 5: RESPONDING = Any nonappraisal behavior that responds substantively or managerially to an element in the instructional situation (i.e., the antecedent behavior of another or an instructional artifact). The responding behavior may be an expression of knowledge, demonstration of a skill and/or an expression of a feeling state or value preference.

Category 6: SOLICITING CLARIFICATION = Any manifest nonappraisal behavior that evokes or intended to evoke from another person the fuller meaning of an antecedent behavior of that other person or a product of his/her behavior. The antecedent behavior may have involved expressions of knowledge, feeling
states or value preferences, and/or motor behavior. The behavior intended to evoke fuller meaning may be in the form of a question, direction, or suggestion.

Category 7: SOLICITING = Any manifest behavior that evokes or is clearly intended to evoke substantive and/or managerial behavior from another person in the instructional situation. Specifically excluded here are those behaviors which fall in the category of soliciting clarification. The soliciting behaviors may ask for expressions of knowledge, feeling states or value preferences, or expressions through motor behavior.

Category 8: JUDGING CORRECTNESS = Any manifest behavior that responds or reacts to an antecedent behavior of the self or another, or to a product of such behavior, appearing in the instructional situation by judging the behavior or product of behavior to be logically, empirically or normatively correct in some degree. Publicly accepted criteria are invoked or could be invoked to support the judgment.

Category 9: PERSONAL POSITIVE JUDGING = Any manifest behavior that responds or reacts to a person (self or another), an antecedent behavior of the self or another, or to a product of such behavior appearing in the instructional situation by expressing a personal, positive judgment about the person, behavior, or product of behavior. The criteria for making the judgment are personal and arise from the feeling states or value preferences of the person doing the judging.

Category 10: ACKNOWLEDGING = Any manifest behavior that responds or reacts to a person (self or other), an antecedent behavior of the self or another, or to a product of such behavior appearing in the instructional situation by acknowledging the person, behavior, or product in ways that indicate that the person, behavior, or product has been perceived. No judgment is explicitly expressed.

Category 11: JUDGING INCORRECTNESS = Any manifest behavior that responds or reacts to an antecedent behavior of the self or another, or to a product of such behavior appearing in the instructional situation by judging the behavior or product of behavior to have been logically, empirically, or
normatively incorrect in some degree. Publicly accepted criteria are invoked or could be invoked to support the judgment.

Category 12: PERSONAL NEGATIVE JUDGING = Any manifest behavior that responds or reacts to a person (self or other), an antecedent behavior of the self or another, or to a product of such behavior by expressing a personal, negative judgment about the person, behavior, or product of behavior. The criteria for making the judgment are personal and arise from the feeling states or value preferences of the person doing the judging.

When each utterance unit had been coded, the frequency and percentage of usage for each interaction analysis category were calculated for each session and for each teacher. Also, the mean frequency and percentage for the five sessions of each teacher were calculated.

Coding Agreement

To indicate the reliability of the codification of categories of communication interaction, a percentage of agreement between the codification of the researcher and another coder was calculated. The researcher's codification was considered to be the standard, and the other coder's results were checked for the number of times that they were in agreement with this standard. Before this procedure is described in more detail, the qualifications of the researcher and the other coder for coding the communication categories will be discussed. The researcher had twenty weeks of graduate level training in the use of the OSIA system. The other coder had the same twenty weeks of graduate level
training in using OSIA and also had used this observational system at the National Technical Institute of the Deaf in Rochester, New York. (The coder used for this agreement check was not used in previous agreement checks in this study.)

The same samples of fifty continuous utterance units that were used for the grammar level agreement checks were used for this agreement check. The coder assigned OSIA categories to the utterances in the transcripts while viewing the videotapes. The mean percentage of agreement between the coder and the researcher was 86.4 percent. The percentages ranged from 70 percent to 96 percent for individual tapes.

Summary

In summary, the words and utterances on all ten tapes were analyzed according to mode of communication, language level, mean word length of utterances, type-token ratio values, and communicative intent. Data were coded concurrently with videotape viewing. Three different people were used to calculate percentages of agreement between the codification of the researcher and the other coders for disparate data. The findings for each variable of interest were reported in terms of frequency and percentages for each session and for each teacher. A mean frequency and percentage were calculated for the five sessions for each teacher. Data were coded and analyzed (tallied) manually.
CHAPTER III
FINDINGS

Introduction

The findings of this study on the verbal characteristics of a beginning and an experienced vocational teacher at a residential school for the deaf are contained in this chapter. Information is presented in six sections: (1) overview of the class sessions; (2) modes of communication used; (3) language level of utterances used; (4) mean length of utterances used; (5) type-token ratio values; and (6) categories of communicative interaction. Each section provides the findings for each teacher and a description of the similarities and differences between them on the variable of interest. A summary of the findings concludes the chapter.

Overview of Class Sessions

A summary of the total number of words and utterances used by each teacher during each session and for the total five sessions is provided in Tables 1 and 2. In the narrative portion of this section a detailed description of the individual class session for each teacher is included.

Beginning Teacher

The data in Table 1 indicate that the beginning vocational teacher used a total of 5899 words and 1439 utterances
over the five observed class sessions. During session one, categorized as review-lecture-discussion, 1533 words and 366 utterances were used. The teacher stood at the front of the classroom and the students were seated at their desks. For more than one half of the class period, the teacher reviewed information which had been presented to the students on the previous day. This review consisted primarily of teacher initiated questions. Following this review new subject matter was presented by the teacher. This subject matter was new vocabulary words to be learned by the students. During this part of the class, the teacher wrote the words and their definitions on the chalkboard and the students copied this information in their notes.

TABLE 1
SUMMARY OF WORDS AND UTTERANCES USED BY A BEGINNING VOCATIONAL TEACHER OVER VARIOUS TYPES OF INSTRUCTIONAL SETTINGS

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Onea</th>
<th>Twob</th>
<th>Threec</th>
<th>Fouro</th>
<th>Fivee</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of words used per session</td>
<td>1533</td>
<td>631</td>
<td>1149</td>
<td>1833</td>
<td>753</td>
<td>5899</td>
</tr>
<tr>
<td>Number of utterances used per session</td>
<td>366</td>
<td>223</td>
<td>263</td>
<td>389</td>
<td>198</td>
<td>1439</td>
</tr>
</tbody>
</table>

a = review-lecture-discussion; b = supervising students in vocational laboratory; c = demonstration-supervising students in vocational laboratory; d = lecture-discussion-demonstration; e = supervising students in vocational laboratory.
During session two the teacher used 631 words which were structured into 223 utterances. In this class session the teacher primarily supervised the students as they worked on their projects in the vocational laboratory.

In session three, 1149 words and 263 utterances were used by the beginning teacher. At the beginning of this class session, the teacher demonstrated the steps in performing a certain task; during this time the students were seated at their desks and the teacher stood at the front of the classroom. Following this demonstration the teacher supervised the students as they performed this task.

During the fourth session the teacher expressed 1833 words and used 389 utterances. In this class the teacher discussed and demonstrated the procedures for using a piece of equipment. Certain information was written on the chalkboard by the teacher and copied by the students. During the class session the students were seated at their desks and the teacher stood at the front of the classroom. At the end of the session the teacher reviewed the information presented.

In the last session the teacher supervised the students as they worked in the vocational laboratory. One hundred and ninety eight (198) utterances containing a total of 753 words were used by the beginning teacher during this session.

Experienced Teacher

Table 2 reports the summary of words and utterances used by the experienced vocational teacher. As the table indicates,
6898 words and 1873 utterances were used over the five class observations. During session one the teacher conducted a review for a test over tool names. The total number of words and utterances used by the teacher was 1703 and 602, respectively. During this session the teacher held up tools and asked students for the tool names. Students either volunteered answers or were called upon. Students who answered correctly wrote the tool names on the chalkboard. During this session the students were seated on chairs and the teacher stood at the front of the classroom.

During session two while supervising the students as they worked on their projects in the vocational laboratory, 1376 words and 356 utterances were used by the teacher.

<table>
<thead>
<tr>
<th>Sessions</th>
<th>One&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Two&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Three&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Four&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Five&lt;sup&gt;e&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of words used per session</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>6898</td>
</tr>
<tr>
<td>Number of utterances used per session</td>
<td>602</td>
<td>356</td>
<td>269</td>
<td>312</td>
<td>334</td>
<td>1873</td>
</tr>
</tbody>
</table>

<sup>a</sup> = review for test; <sup>b</sup> = supervising students in vocational laboratory; <sup>c</sup> = demonstration/supervising students in vocational laboratory; <sup>d</sup> = supervising students in vocational laboratory; <sup>e</sup> = supervising students in vocational laboratory.
In session three the teacher began the class session by demonstrating the steps in performing a task. During this demonstration, which took place in the vocational laboratory, the students stood around the table where the teacher was located. After the demonstration the teacher supervised the students as they worked in the vocational laboratory. The number of words and utterances used by the teacher was 1310 and 269, respectively.

During sessions four and five the experienced teacher supervised the students as the students worked on their projects in the vocational laboratory. The total number of words and utterances for session four was 1206 and 312, respectively. The total number of words used in session five was 1303 and the total number of utterances was 334.

Modes of Communication

The percentages of communication modes used by a beginning and an experienced vocational teacher of the deaf over five class sessions are presented in Tables 3 and 4.

Beginning Teacher

The data in Table 3 indicate that around 85 percent (85\%) of the average number of words (N = 1180) used by the beginning vocational teacher for five class sessions were expressed through the "oral only" and "oral plus sign". The figures in the table indicate that these two modes tended to be used equally (43.4\% and 42.1\%, respectively). Three other
<table>
<thead>
<tr>
<th>Category of communication mode</th>
<th>One(^a)</th>
<th>Two(^b)</th>
<th>Three(^c)</th>
<th>Four(^d)</th>
<th>Five(^e)</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Oral only (O)</td>
<td>559</td>
<td>36</td>
<td>244</td>
<td>39</td>
<td>632</td>
<td>55</td>
</tr>
<tr>
<td>Oral plus sign (OS)</td>
<td>703</td>
<td>46</td>
<td>307</td>
<td>49</td>
<td>424</td>
<td>37</td>
</tr>
<tr>
<td>Sign only (S)</td>
<td>23</td>
<td>2</td>
<td>43</td>
<td>7</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Oral plus fingerspelling (OF)</td>
<td>105</td>
<td>7</td>
<td>18</td>
<td>3</td>
<td>45</td>
<td>4</td>
</tr>
<tr>
<td>Fingerspelling only (F)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Writing only (W)</td>
<td>97</td>
<td>6</td>
<td>3</td>
<td>-</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Oral plus writing (OU)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Oral plus undetermined (O?)</td>
<td>46</td>
<td>3</td>
<td>16</td>
<td>2</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>1533</td>
<td>100</td>
<td>631</td>
<td>100</td>
<td>1149</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^{a}\) = review-lecture-discussion; \(^{b}\) = supervising students in vocational laboratory; \(^{c}\) = demonstration-supervising students in vocational laboratory; \(^{d}\) = lecture-discussion-demonstration; \(^{e}\) = supervising students in vocational laboratory.
categories of communication modes ("sign only", "oral plus fingerspelling", and "writing only") were used but to a lesser extent (3.3%, 5.2%, and 4.0%, respectively). The figures in Table 3 show that during sessions one and four slightly more use was made of the categories "oral plus fingerspelling" and "writing only". During sessions two and five slightly more use was made of the category "sign only". Finally, Table 3 shows that on the average 2.0 percent of the beginning teacher's words were coded "oral plus uncodable". This means that the teacher's oral output was recorded but because of the position of the camera the simultaneous use of any other mode could not be determined when viewing the videotapes.

**Experienced Teacher**

Table 4 shows that on the average more than 85 percent (85%) of the words (N = 1380) used by the experienced vocational teacher were expressed primarily through the "oral only" and "oral plus sign" modes. Regarding these two modes, the figures in Table 4 indicate that the teacher used the "oral plus sign" mode slightly more than the "oral only" mode (46.4% and 41.0%, respectively). Two other mode categories ("sign only" and "oral plus fingerspelling") were used but to a less extent (4.1% and 7.3%, respectively). Finally, the data in Table 4 show that about 1 percent (1%) of the words used by the experienced teacher during the "average" class session was coded "oral plus uncodable". This means
TABLE 4
MODES OF COMMUNICATION USED BY AN EXPERIENCED VOCATIONAL TEACHER

<table>
<thead>
<tr>
<th>Category of communication mode</th>
<th>Sessions</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Onea</td>
<td>Twob</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Oral only (O)</td>
<td>686</td>
<td>40</td>
</tr>
<tr>
<td>Oral plus sign (OS)</td>
<td>798</td>
<td>47</td>
</tr>
<tr>
<td>Sign only (S)</td>
<td>54</td>
<td>3</td>
</tr>
<tr>
<td>Oral plus fingerspelling (OF)</td>
<td>151</td>
<td>9</td>
</tr>
<tr>
<td>Fingerspelling only (F)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Writing only (W)</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Oral plus writing (OW)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oral plus undetermined (O?)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>1703</td>
<td>100</td>
</tr>
</tbody>
</table>

a = review for test; b = supervising students in vocational laboratory; c = demonstration/supervising students in vocational laboratory; d = supervising students in vocational laboratory; e = supervising students in vocational laboratory
that the teacher's oral output was recorded but because of the camera angle the simultaneous use of any other mode could not be determined when viewing the videotapes.

**Comparison of the Two Teachers**

The figures in Table 5 indicate that there were similarities between the average percentages of communication modes used by the beginning and the experienced vocational teacher. Both teachers primarily used the "oral only" and the "oral plus sign" modes. The figures indicate that the beginning teacher tended to use slightly more "oral only"

<table>
<thead>
<tr>
<th>Category of Communication Mode</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beginning</td>
</tr>
<tr>
<td></td>
<td>(Average N. of Modes = 1180)</td>
</tr>
<tr>
<td>Oral only</td>
<td>43.4</td>
</tr>
<tr>
<td>Oral plus sign</td>
<td>42.1</td>
</tr>
<tr>
<td>Sign only</td>
<td>3.3</td>
</tr>
<tr>
<td>Oral plus finger-spelling</td>
<td>5.2</td>
</tr>
<tr>
<td>Writing only</td>
<td>4.0</td>
</tr>
<tr>
<td>Oral plus uncodable</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
modes than the experienced teacher (43.4% and 41.0%, respectively); the experienced teacher tended to use slightly more "oral plus sign" than the new teacher (46.4% and 42.1%, respectively). Both teachers tended to have the same percent of usage for the "sign only" category (4.0%). Regarding the "oral plus fingerspelling" mode, the experienced teacher tended to have a slightly higher percentage of usage than the beginning teacher (7.3% and 5.2%, respectively). Finally, the data in Table 5 also show that the experienced teacher tended not to use the "writing only" mode where as the beginning teacher used it for 4.0 percent of the words expressed.

Language Level

The percentages of grammar levels used by a beginning and an experienced vocational teacher of the deaf over five class sessions are reported in Tables 6 and 7.

**Beginning Teacher**

The data in Table 6 indicate that on the average, the beginning vocational teacher used approximately 288 utterances which were expressed primarily at the transformational (47.6%) and the fragmented grammar levels (48.0%). Although the average use of these two language levels tended to be similar in mean percentages used, an inspection of the figures in Table 6 by individual class session show that during sessions one, two and five, fragmented grammar was
<table>
<thead>
<tr>
<th>Level of grammar used</th>
<th>Sessions</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>Phrase structure</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>Transformational</td>
<td>157</td>
<td>43</td>
</tr>
<tr>
<td>Fragmented</td>
<td>188</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>366</td>
<td>100</td>
</tr>
</tbody>
</table>

\(a = \text{review-lecture-discussion}; \ b = \text{supervising students in vocational laboratory}; \ c = \text{demonstration-supervising students in vocational laboratory}; \ d = \text{lecture-discussion-demonstration}; \ e = \text{supervising students in vocational laboratory}.\)
used more than transformational grammar and the differences in percentages was greater than the difference between the average figures (8%, 29%, and 17% respectively). During sessions three and four transformational grammar was used more than the fragmented grammar and the differences were greater than the average figures (32% and 11%, respectively). Finally, Table 6 shows that the use of phrase structure grammar during the "average" class session tended to be about 4.0 percent of the total utterances used.

**Experienced Teacher**

The figures in Table 7 show that on the average the experienced vocational teacher used approximately 375 utterances which were expressed at the transformational grammar level (43.7%) and the fragmented grammar level (52.3%). In session one, however, the teacher used slightly more fragmented grammar (63%) than during other sessions. Phrase structure grammar accounted for approximately 4 percent of the utterances used by the experienced teacher.

**Comparison of the Two Teachers**

The figures in Table 8 show that there tended to be similarities between the average percentages of grammar levels used by the beginning and the experienced vocational teacher. Of the total number of average utterances used by both teachers, approximately 4 percent were phrase structure.
## TABLE 7
LEVEL OF GRAMMAR USED BY AN EXPERIENCED VOCATIONAL TEACHER

<table>
<thead>
<tr>
<th>Level of grammar used</th>
<th>Sessions</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One a</td>
<td>Two b</td>
</tr>
<tr>
<td>Phrase structure</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>Transformational</td>
<td>197</td>
<td>50</td>
</tr>
<tr>
<td>Fragmented</td>
<td>379</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td>602</td>
<td>100</td>
</tr>
</tbody>
</table>

a = review for test; b = supervising students in vocational laboratory; c = demonstration/supervising students in vocational laboratory; d = supervising students in vocational laboratory; e = supervising students in vocational laboratory
TABLE 8
A COMPARISON OF THE AVERAGE PERCENTAGES OF THE GRAMMAR LEVEL USED BY A BEGINNING AND AN EXPERIENCED VOCATIONAL TEACHER OVER FIVE CLASS OBSERVATIONS

<table>
<thead>
<tr>
<th>Level of grammar used</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beginning (Average N. of utterances = 288)</td>
</tr>
<tr>
<td>Phrase structure</td>
<td>4.3</td>
</tr>
<tr>
<td>Transformational</td>
<td>47.6</td>
</tr>
<tr>
<td>Fragmented</td>
<td>48.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99.9</strong></td>
</tr>
</tbody>
</table>

The beginning teacher, however, used slightly more transformational grammar than the experienced teacher (47.6% and 43.7%, respectively). The experienced teacher used slightly more fragmented grammar than the beginning teacher (52.3% and 48.0%, respectively).

**Average Length of Utterances**

The figures in Tables 9 and 10, show that both the beginning and the experienced vocational teacher tended to use utterances which were approximately four words long. The mean utterance length for each session was calculated by dividing the total number of words used by the total number of utterances used.
### TABLE 9
MEAN LENGTH OF UTTERANCES USED BY A BEGINNING VOCATIONAL TEACHER

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Onea</th>
<th>Twob</th>
<th>Threc</th>
<th>Foure</th>
<th>Fives</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of words used per session</td>
<td>1533</td>
<td>631</td>
<td>1149</td>
<td>1833</td>
<td>753</td>
<td>1180</td>
</tr>
<tr>
<td>Total number of utterance units used per session</td>
<td>366</td>
<td>223</td>
<td>263</td>
<td>389</td>
<td>198</td>
<td>288</td>
</tr>
<tr>
<td>Average number of words per utterance</td>
<td>4.19</td>
<td>2.83</td>
<td>4.37</td>
<td>4.71</td>
<td>3.80</td>
<td>4.10</td>
</tr>
</tbody>
</table>

a = review-lecture-discussion; b = supervising students in vocational laboratory; c = demonstration-supervising students in vocational laboratory; d = lecture-discussion-demonstration; e = supervising students in vocational laboratory.

### TABLE 10
MEAN LENGTH OF UTTERANCES USED BY AN EXPERIENCED VOCATIONAL TEACHER

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Onea</th>
<th>Twob</th>
<th>Threc</th>
<th>Foure</th>
<th>Fives</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of words used per session</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>1380</td>
</tr>
<tr>
<td>Total number of utterance units used per session</td>
<td>602</td>
<td>356</td>
<td>369</td>
<td>312</td>
<td>334</td>
<td>375</td>
</tr>
<tr>
<td>Average number of words per utterance</td>
<td>2.83</td>
<td>3.87</td>
<td>4.87</td>
<td>3.87</td>
<td>3.90</td>
<td>3.68</td>
</tr>
</tbody>
</table>

a = review for test; b = supervising students in vocational laboratory; c = demonstration/supervising students in vocational laboratory; d = supervising students in vocational laboratory; e = supervising students.
Type-Token Ratio Values

The type-token ratio (TTR) values for a beginning and an experienced vocational teacher of the deaf are reported in Tables 11 and 12.

Beginning Teacher

The data in Table 11 indicate that on the average the beginning vocational teacher had a TTR value of .20. This indicates that the teacher tended to repeat the same words over again 80 percent of the time. When all the words used in the five sessions were pooled together as one language sample, the cumulative TTR value was .10. This means that over five observations the teacher tended to repeat the same words (N - 597) 90 percent of the time.

TABLE 11
TYPE-TOKEN RATIO VALUES FOR A BEGINNING VOCATIONAL TEACHER

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Cumulative Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Onea</td>
<td>Twob</td>
</tr>
<tr>
<td>Total number of different words used</td>
<td>273</td>
</tr>
<tr>
<td>Total number of words used</td>
<td>1533</td>
</tr>
<tr>
<td>Type token ratio value</td>
<td>.18</td>
</tr>
</tbody>
</table>

a = review-lecture-discussion; b = supervising students in vocational laboratory; c = demonstration-supervising students in vocational laboratory; d = lecture-discussion-demonstration; e = supervising students in vocational laboratory; f = the total number of different words used over five class sessions divided by its total number of words used over five class sessions.
Experienced Teacher

Table 12 reports the TTR value for an experienced vocational teacher of the deaf as being .23. This indicates that the experienced teacher tended to use the same words over again approximately 80 percent of the time. When all the words used in all five sessions were "pooled" as one language sample, the TTR value was .11. This indicates that over the five observed sessions, the experienced teacher tended to use the same words (N = 752) over again approximately 90 percent of the time.

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Onea</th>
<th>Twob</th>
<th>Threec</th>
<th>Fourd</th>
<th>Fivec</th>
<th>Average</th>
<th>Cumulative Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onea</td>
<td>378</td>
<td>274</td>
<td>312</td>
<td>322</td>
<td>290</td>
<td>315</td>
<td>752</td>
</tr>
<tr>
<td>Twob</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>1380</td>
<td>6898</td>
</tr>
<tr>
<td>Threec</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>1380</td>
<td>6898</td>
</tr>
<tr>
<td>Fourd</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>1380</td>
<td>6898</td>
</tr>
<tr>
<td>Fivec</td>
<td>1703</td>
<td>1376</td>
<td>1310</td>
<td>1206</td>
<td>1303</td>
<td>1380</td>
<td>6898</td>
</tr>
</tbody>
</table>

a = review for test; b = supervising students in vocational laboratory; c = demonstration/supervising students in vocational laboratory; d = supervising students in vocational laboratory; e = supervising students in vocational laboratory; f = the total number of different words used over five class sessions divided by the total number of words used over five class sessions.
Comparison of the Two Teachers

In summary, both the beginning and the experienced vocational teacher tended to repeat the same words 80 percent of the time.

Categories of Communicative Interaction

The percentages of communicative interaction categories used by a beginning and an experienced vocational teacher of the deaf over five class sessions are reported in Tables 13 and 14.

Beginning Teacher

The figures in Table 13 indicate that on the average a larger percentage of the utterances expressed by the beginning vocational teacher were used to "initiate" information (35%), "solicit" student behavior (37%), and "judge correctness" of student behavior (11%). Five other categories of communicative interaction were observed but to a less extent"" responding" (3%), "soliciting clarification" (6%), "personal positive judging" (2%), "acknowledging" (4.0%), "juding incorrectness" (2%).
<table>
<thead>
<tr>
<th>Interaction analysis categories</th>
<th>Sessions</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>Initiating</td>
<td>147</td>
<td>57</td>
</tr>
<tr>
<td>Responding</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Soliciting clarification</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>Soliciting</td>
<td>123</td>
<td>34</td>
</tr>
<tr>
<td>Judging correctness</td>
<td>37</td>
<td>10</td>
</tr>
<tr>
<td>Personal positive judging</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Acknowledging</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Judging incorrectness</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Personal negative judging</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>366</td>
<td>100</td>
</tr>
</tbody>
</table>

a = review-lecture-discussion; b = supervising students in vocational laboratory; c = demonstration-supervising students in vocational laboratory; d = lecture-discussion-demonstration; e = supervising students in vocational laboratory.
Table 13 shows that during session five the beginning teacher used more "responding" (11%) and "soliciting clarification" (15%) than during the other four sessions.

**Experienced Teacher**

The figures in Table 14 indicate that on the average the experienced vocational teacher used utterances to "initiate" information (24%), "solicit" student behavior (42%), and "judge correctness" of student behavior (13%). Five other categories were observed but to a less extent: "responding" (3%), "soliciting clarification" (3%), "personal positive judging" (8%), "acknowledging" (4%), "judging incorrectness" (3%). "Personal negative judging" was reported as a negligible percent. The table indicates that during session one the teacher used the category "judging correctness" (22%) to a larger extent than in the other sessions.

**Comparison of the Two Teachers**

Inspection of Table 15 shows similar patterns in the use of the communicative categories of interaction by the beginning and the experienced vocational teacher. During the observed class sessions both teachers used to a large extent "initiating information", "soliciting student behavior", and "judging correctness of student behavior". The beginning teacher had slightly higher percentages for "initiating behavior" than the experienced teacher (35% and 24%).
<table>
<thead>
<tr>
<th>Interaction analysis categories</th>
<th>Sessions</th>
<th>Mean frequencies and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One a</td>
<td>Two b</td>
</tr>
<tr>
<td>Initiating</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Responding</td>
<td>94 16</td>
<td>79 22</td>
</tr>
<tr>
<td>Soliciting clarification</td>
<td>11 2</td>
<td>15 4</td>
</tr>
<tr>
<td>Soliciting</td>
<td>20 3</td>
<td>6 2</td>
</tr>
<tr>
<td>Judging correctness</td>
<td>235 39</td>
<td>171 48</td>
</tr>
<tr>
<td>Personal positive judging</td>
<td>135 22</td>
<td>31 9</td>
</tr>
<tr>
<td>Acknowledging</td>
<td>63 11</td>
<td>23 6</td>
</tr>
<tr>
<td>Judging incorrectness</td>
<td>36 6</td>
<td>12 3</td>
</tr>
<tr>
<td>Personal negative judging</td>
<td>6 1</td>
<td>17 5</td>
</tr>
<tr>
<td>Total</td>
<td>602 100</td>
<td>356 100</td>
</tr>
</tbody>
</table>

a = review for test; b = supervising students in vocational laboratory; c = demonstration/supervising students in vocational laboratory; d = supervising students in vocational laboratory; e = supervising students in vocational laboratory.
<table>
<thead>
<tr>
<th>Categories of communicative interaction</th>
<th>Teachers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beginning (Average N. of categories = 288)</td>
<td>Experienced (Average N. of categories = 375)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiating</td>
<td>35</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Responding</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Soliciting clarification</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Soliciting</td>
<td>37</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Judging correctness</td>
<td>11</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Personal positive judging</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Acknowledging</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Judging correctness</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Personal negative judging</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

respectively). The experienced teacher had slightly higher "soliciting student behavior" than the beginning teacher (42% and 37% respectively).

With regard to the other categories of communicative interaction both teachers tended to have the same usage for "responding" (37%); the beginning teacher tended to have slightly higher "soliciting clarification" than the
experienced teacher (6% and 3%, respectively); the experienced teacher tended to have slightly higher "personal positive judging" than the beginning teacher (8% and 2%, respectively); and both teachers tended to have the same percentage for the categories "acknowledging" and "judging correctness" (4% and approximately 3%, respectively). Neither teacher tended to use the category "personal negative judging".

Summary of the Findings

The findings on the verbal output of a beginning and an experienced vocational teacher of the deaf for five class observations are summarized as follows:

(1) Both teachers primarily used the "oral only" and "oral plus sign" modes. On the average, the beginning teacher used slightly more "oral only" modes than the experienced teacher (43.4% and 41.0%, respectively); the experienced teacher used slightly more "oral plus sign" than the new teacher (46.4% and 42.1%, respectively).

(2) Both teachers primarily used transformational and fragmented grammar (beginning teacher = 47.6% and 48%, respectively; experienced teacher = 43.7% and 52.3%, respectively).

(3) On the average, both teachers used utterances which were approximately four words long.
(4) Both teachers tended to have type-token ratio values of .20.

(5) On the average, the beginning and the experienced vocational teachers primarily used the communicative interaction categories of "initiating", "soliciting" and "judging correctness" (beginning teacher = 35%, 37%, and 11%, respectively; experienced teacher = 24%, 42%, and 13%, respectively.)
CHAPTER IV
SUMMARY, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

The Problem

The study was designed to:

1. describe the verbal language of a beginning and an experienced vocational teacher at a residential school for the deaf in terms of--
   a. modes of communication used to express words
   b. language level of the utterances used
   c. mean length of utterances used
   d. type-token ratio values
   e. communicative patterns of interaction

2. describe the similarities and differences in the characteristics of the verbal language of both the beginning and the experienced vocational teacher

Procedure

The subjects for this study were two of the sixteen vocational teachers employed at a state residential school for the deaf located in the midwestern section of the United States. The two teachers were selected on the basis of
their teaching experience with deaf students and their ability to use manual communication.

Beginning the second semester of the school year, five class sessions for each teacher were videotaped using a Sony portable tape recorder and black and white camera. The recordings were sequenced over the semester with a one month interval between each taping. The students in the classes for both teachers were at the junior high level and enrolled in these vocational classes as part of the school's prevocational/exploratory program.

For each of the ten videotape recordings, a written transcript of the verbal language used by the teacher during the entire class session was prepared. The verbal language was reported as leximes (words).

As the tapes were being transcribed, utterance boundary markers (vertical lines) were drawn between the words to designate the segmentation of sequences of words into utterance units. Once the words were transcribed and segmented into utterance units, five types of data were collected: (1) modes of communication used to express words, (2) language level of utterance unit; (3) mean word length of each utterance unit; (4) type-token ratio values; and (5) the communicative intent of each utterance unit as determined by a communicative interaction analysis system.
To determine the modes of communication used, all of the words in all ten transcripts were individually coded while viewing the videotapes. The categories of communication modes were as follows: "oral only", "oral plus sign", "sign only", "oral plus fingerspelling", "fingerspelling only", "writing only", "oral plus writing", and "oral plus uncodable". When each word had been coded, the frequency and percentage of usage for each mode category were calculated for each session and for each teacher. Also, the mean frequency and percentage for the five sessions of each teacher were calculated.

To determine the language level of the language used, all of the utterance units in all ten transcripts were coded according to three levels of language: (1) "fragment"; (2) "phrase structure"; and (3) "transformation". When each utterance unit had been coded, the frequency and percentage of usage for each language level category was calculated for each session and for each teacher. In addition the mean frequency and percentage for the five sessions of each teacher were calculated.

To determine the mean length of utterance units, the total number of words on each transcript for each teacher was divided by the total number of utterances for each transcript. A mean utterance length was calculated for the five sessions for each teacher.
To determine the language flexibility of each teacher, a type-token ratio was calculated for each session of each teacher. A type-token ratio was calculated by dividing the total number of different words used in each transcript by the total number of words used in each transcript. A mean total type-token ratio was also calculated for the total five sessions for each teacher. In addition, a total type-token ratio was calculated for the total five sessions by combining the total number of different words used by each teacher for the five sessions and then dividing this number by the total number of words used over the five sessions.

To determine the patterns of communicative interaction, all of the utterances on all ten transcripts were coded using the Observation System of Instructional Analysis schedule. The coding was done while viewing the videotapes. When each utterance had been coded, the frequency and percentage of each interaction analysis category were calculated for each session and for each teacher. Also, the mean frequency and percentage for the five sessions of each teacher were calculated.

Summary of the Findings

The findings on the verbal output of a beginning and an experienced vocational teacher of the deaf for five class observations are summarized as follows:
(1) Both teachers primarily used the "oral only" and "oral plus sign" modes. On the average, the beginning teacher used slightly more "oral only" modes than the experienced teacher (43.4% and 41.0%, respectively); the experienced teacher used slightly more "oral plus sign" than the beginning teacher (46.4% and 42.1%, respectively).

(2) Both teachers primarily used transformational and fragmented grammar (beginning teacher = 47.6% and 47%, respectively; experienced teacher = 43.7% and 52.3%, respectively).

(3) On the average, both teachers used utterances which were approximately four words long.

(4) Both teachers tended to have type-token ratio values of .20.

(5) On the average, the beginning and the experienced vocational teachers primarily used the communicative interaction categories of "initiating", "soliciting" and "judging correctness" (beginning teacher = 35%, 37%, and 11%, respectively; experienced teacher = 24%, 42%, and 13% respectively).

Conclusions

Based on the findings of this study, the following conclusions were drawn about the verbal language used by the two teachers during the class observations:
(1) On the quantitative measures of the study and for the class sessions observed, there tended to be no differences in the verbal output between the beginning and the experienced vocational teacher:

(a) Both teachers presented a relatively large portion of their verbal information through a mode which required that the students have the ability to read lips or receive information through nonverbal means, or both.

(b) Both teachers used utterances that were relatively short and simple in construction but which required some understanding of transformational rules.

(c) Both teachers tended to use a restricted and repetitious vocabulary.

(d) Both teachers tended to use utterances during the observations that did not permit or provide an opportunity for verbal expansion by the students; the classroom tended to be teacher-dominated.

(2) Based on the quantitative measures of the study and for the class sessions observed, teaching experience seemed to have minimal bearing on the teachers' language.

Discussion

After closely examining the data, a basic question arises: Why is there little or no difference in the structure and function of verbal language between a teacher with
over seven years experience and a beginning teacher. There are several possible explanations. First, it may be that on-the-job experience has minimal bearing on the teacher's language. Without specialized training in language development, teachers may not be aware of or skilled in techniques for adapting and modifying their language. Thus, over time, a teacher's approach to language does not measurably change. Another possibility is that vocational teachers tend to use only those approaches that have proven successful for them in working with deaf students. After a relatively brief period of classroom experience with deaf students, teachers may recognize patterns of difficulty in communication and rely on those words or phrases that will elicit the desired response from students. In essence then, teachers may tend to adopt the language level of deaf students. A third possibility is that the vocational classroom environment itself may not provide and may even preclude possibilities or potentials for expanded verbal communication. The manipulation of objects (task performance) may be the prime focus in the vocational classroom for deaf students, and language may be considered secondary in importance. A fourth possibility is that differences may exist; however, they may only be apparent through a qualitative examination of the data. This researcher examined modes of communication, language level, average sentence length, type-token ratio values,
and the communicative intent of utterances quantitatively. An examination of the videotape transcripts reveals some interesting areas as possibilities for qualitative study.

The first area deals with the modes of communication used by the teachers. The data in this study show that both teachers primarily used "oral only" and "oral plus sign" modes. The data also are indicative of those modes which were not used or used infrequently, i.e., sign, finger-spelling, and writing. The implication of this "non-use" is that the teacher may be limiting the students' universe of communication modes. The data, however, do not indicate which words were expressed in a particular mode. The following example illustrates the need to examine qualitative as well as quantitative data. The sentence, "That is not right.", could be expressed differently by each teacher as follows:

(1) "That is not right."
   OS  OS  O  OS

(2) "That is not right."
   OS  O  OS  OS

In the first sentence, the words expressed orally (O) are "that is not right"; however, in sign language (S), the words expressed are "That is...right". If students rely primarily on the sign mode to receive information as research indicates, then they have received a verbal message that is semantically different from the teacher's original intent.
In the second sentence, the conjugated form of the verb "to be" is omitted through the sign mode; however, the original meaning of the sentence is probably not altered—"That not right". While this form is not grammatically correct, it probably conveys the meaning. This example illustrates how two teachers could be quantitatively the same (OS = 3, o = 1) but could be qualitatively different. It also highlights the absolute necessity of a word-by-word examination and analysis as a prelude to any discussion of teacher effectiveness and efficiency.

Another qualitative aspect that should be examined is how teachers use nonverbal language in conjunction with their verbal language. In the second sample sentence presented earlier, the negative "not" was omitted in the sign mode. It could be possible that the teacher expressed this negative through some form of nonverbal communication. The students may then receive the intent of the message regardless of the fact that the verbal message was incomplete. It may, therefore, be important to examine and analyze how nonverbal language supplements are used in conjunction with verbal language. This researcher noted that the experienced teacher seemed to be more skilled than the beginning teacher at using "body language". It may be that over time a teacher relies more heavily on the nonverbal modes to convey content and meaning.
With regard to the language level of utterances used, both teachers tended to use the same number of sentence fragments and transformations. Therefore, it may be inferred that the students either have the ability to understand both basic transformational rules and the relationship between the surface and deep structures, or that the students do not really understand what the teacher is saying. The implication of this inference is that the teacher must be fully aware of the language level upon which a student operates for that student to comprehend fully the intended message. It may be that teachers need specific preservice and inservice training in understanding language levels to maximize effective communication with students.

There also appears to be a relationship between language levels and modes of communication. For example, in the sentence

"Did you cut the paper?"

there are two distinct language levels according to mode. Orally, this sentence is a transformation because it is an interrogative. In the sign mode, however, the sentence is on the phrase structure level, i.e., it is a noun phrase and verb and noun phrase. The teacher may be unaware of the operating language level when saying this sentence. If the teacher is unaware of the mode being presented, there may be discrepancy between the intended and the actual level of the message.
Any analysis should include not only an examination of the number of language levels used, but also an examination of the modes in which they operate as well as the qualitative aspects of the fragments and the transformations. A shift in emphasis may make a difference in the impact of language.

Another aspect of the teachers' language that was examined in this study was the average length of utterance. The data indicate that on the average both teachers used short utterances in the classrooms. A qualitative analysis may show that one teacher may use short sentences consistently while the other may use a combination of short and long sentences; however, the average of the two may be the same. Sentence length has a definite bearing on linguistic complexity. The experienced teacher tended to use shorter sentences consistently, which may indicate that teachers over time consciously attempt to simplify language structure. It is interesting to note in the transcripts that the beginning teacher would occasionally express a complex idea in a lengthy sentence. Usually, the students would not respond, at which point the teacher would resort to paraphrasing and shortening sentence length to elicit the desired response. Further research on the importance of sentence complexity may indicate an optimum length for clear
The fourth aspect of the teachers' language that was examined is type-token ratio values. The data reveal that both teachers were extremely repetitive in use of vocabulary. It may be that teachers assume that a point can only be made emphatically by constant repetition of key words or phrase. Another possible explanation is that the classroom environment itself may limit the use of an extended vocabulary. It may also be possible that teachers are reluctant to introduce new words and meanings to students with a seemingly limited vocabulary. The teachers may use only those words which elicit the desired results from the students.

A qualitative examination of the type-token data according to word class would provide additional insights to those categories of words that tend to be repeated as well as those that are repeated only infrequently. Teachers may tend to use a stock group of nouns, verbs, adjectives, adverbs, and prepositions which, when combined, form stock phrases that communicate successfully to students. An awareness activity for teachers on the extent of their classroom vocabulary may in fact have a bearing on vocabulary development of the students. All these variations

communication of relatively complex ideas. An interesting investigation may be to track or trace language manipulation by students who cannot or will not respond to a long sentence unless it is paraphrased.
point to a single, fundamental question--Are teachers aware of the words they use or do not use?

With regard to patterns of communicative interaction, both teachers were very similar quantitatively. From observations in the classroom and from the data gathered in the study, the typical pattern in the classroom seems to be as follows: the teacher would give information (e.g., lecture or instructions); ask questions to see if the students understand what was said; ask the students to perform certain tasks, at which point the teacher would judge the correctness or incorrectness of student behavior. Several factors may have contributed to these observed behavioral patterns.

Research indicates that an observer does have some effect on a teacher's verbal behavior. Therefore, it is possible that a teacher, self-conscious about being videotaped, would tend to make fewer negative judgments, would attempt to exert greater control and dominance in classroom communication interaction, and would decrease opportunities for conversational exchange. It is possible that the teachers wanted the sessions to be highly structured so no "embarrassing" incidents would be recorded on the videotapes.

Another possible explanation lies in the teacher's perceptions of their roles as instructors. They may see
themselves as pedagogues only and perceive their responsibilities as purely didactic. Teachers tend to allow only one-way conversations which they can control.

With regard to the use of interrogatives in the classroom, it appears that teachers frequently resort to the use of tag questions to subtly reinforce ideas through repetition. Research on the use of tag questions may produce surprising results on the students' basic ability to comprehend and to respond.

After conducting the study and examining the data, this researcher feels that a fundamental question still remains to be answered. "Does it really make a difference what and how the teacher expresses verbally in the classroom?" That is, does it make a difference if the teacher signs every word or only uses oral mode or writes or never writes words? Does it make a difference if the teacher uses simple or complex language, short or long utterance? Does it make a difference if the teacher uses a restricted vocabulary? Does it make a difference if the students have limited opportunity to make communication?

The answers to these questions are related to a philosophy of the purpose of vocational education for deaf students as preparation for the world of work. It may be that these things do not make a difference in the microcosm of the classroom where parameters and limits are clearly
defined. As long as the classroom offers the immediacy of gestures, objects, and demonstrations, the teacher may well be satisfied with a student's performance. Visible motor management may in fact supersede the full use of language as the fundamental means of communication in the classroom; however, one must ask if these same conditions and techniques are viable outside the classroom and in the world of work.

The relative importance of language has a definite effect on teacher training and subsequently, teacher evaluation. If one assumes that language plays an important role in vocational education of the hearing impaired, then adequate preservice and inservice training in the use and importance of language must be available in teacher education for the deaf.

The alternative to unconscious use of language is the optimum use of language to achieve pedagogic goals which have a marked effect on adequate preparation of students to cope outside the walls of the classroom. That is, is the purpose of vocational education to train a student in a particular skill, or is it to prepare the student to function independently and with self-reliance in the world of work and in society in general? If students are to be given every opportunity and every advantage to function successfully in the world of work and in daily life, then
vocational teachers must share the responsibility of language development of the deaf. Language is probably the single, most critical need of today's deaf student in vocational education programs.

Recommendations

Based on findings and conclusion of this study, the following recommendations are offered:

1. To generalize the findings of this study to other vocational teachers as well as to academic teachers, the study should be replicated with both.

2. Studies which include analysis of modes of communication, language level, language length, vocabulary, and patterns of communication should be conducted to determine the teachers' level of awareness of these variables. These studies will reveal the similarities and differences in a teacher's actual and intended communicative purpose.

3. Studies should be conducted to analyze the relationship between a teacher's verbal output and student behavior as well as the effects of the output on a student's knowledge.

4. The relationship among modes of communication, language levels, specific vocabulary, sentence
length, and patterns of communication should be further explored. For example, given certain linguistic conditions (questions, imperatives, statements), which modes of communication, language level, and vocabulary prevail?

5. A study of the focus and emphasis of preservice and inservice education of vocational teachers of the deaf should be conducted to determine strengths and weaknesses of teacher preparation, particularly in the area of language and linguistics.
BIBLIOGRAPHY


84


Hough, J. and Duncan, J. The Observation System for Instructional Analysis (Preliminary draft papers No. 1, 2, 3, and 4). Columbus: The Ohio State University, Faculty of Curriculum and Instruction, 1975.


Reich, P. and Reich, C. A Follow-Up Study of the Deaf. Ontario, Canada: Toronto University, January 1974.


