

THE EFFECTIVENESS OF PARENT-SUPERVISED
SPEECH THERAPY HOME ASSIGNMENTS
WITH ARTICULATORY DEFECTIVE
PUBLIC SCHOOL CHILDREN

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We hereby recommend that the thesis prepared under
our supervision by Phyllis Elaine Marshall

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SPEECH THERAPY HOME ASSIGNMENTS WITH ARTICULATORY
DEFECTIVE PUBLIC SCHOOL CHILDREN

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CHAPTER I

INTRODUCTION

A number of professional personnel in the field of speech and hearing therapy seem to agree that the public school speech therapist is an invaluable asset in effecting the remediation of speech defects in children.^{1,2} Black has referred to the public school speech therapist as "the backbone of our profession."³ Therefore, the public school speech therapist might be considered one of the more important persons responsible for providing speech therapy services to a great number of speech defective children in our population. To illustrate the great number of speech defective children in the schools today, Johnson and others point out that "speech handicapped children are not only the largest group of exceptional children within the total population but also the largest group in the area

¹Ruth Beckey Irwin, Speech and Hearing Therapy (New Jersey: Prentice-Hall, Inc., 1953).

²Jon Eisenson and Mardel Ogilvie, Speech Correction in the Schools (New York: The Macmillan Co., 1957).

³Martha E. Black, Speech Correction in the Schools (New Jersey: Prentice-Hall, Inc., 1964), p. vi.

of special education in the nation's elementary and secondary schools."¹

The majority of speech problems that a public school speech therapist deals with are believed to be of the functional articulatory type. For the purpose of clarification, and since the writer will be referring to articulatory defects as being the so-called functional type, the following definitions will be presented for the benefit of the reader. Reid considers a functional articulatory defect as "any phonetic lapse, substitution, omission, or distortion of sound, for which there is no apparent cause."² In referring to functional articulation disorders in children, Roe states that these are "cases of defective articulation which cannot be accounted for by any organic, mental or physical deficiency but which are the result of incorrect use of the structures which are employed in speech."³ Mase defines functional articulation disorders as follows:

¹Wendell Johnson, et al., Speech Handicapped School Children (3rd ed.; New York: Harper and Row, Publishers, 1967), pp. 1-2.

²Gladys Reid, "The Efficacy of Speech Re-education of Functional Articulatory Defectives in the Elementary School," Journal of Speech and Hearing Disorders, XII (September, 1947), 302.

³Vivian Roe, "Children Who Can't Talk Plain," Speech Problems of Children, ed. Wendell Johnson (New York: Grune and Stratton, Inc., 1950), p. 65.

. . . the large majority of those [individuals] with articulatory disorders have not mastered an acceptable production of the sounds for speech during the normal growing-up process. We speak of these individuals as having functional articulatory speech disorders.¹

The writer would then like to define functional articulation disorders, for the purpose of this study, as being the substitution, omission, addition, or distortion of sound having no obvious evidence of an organic etiology.

Etiology of Functional Articulation Defects

Among professional sources there seems to be no unanimity of opinion as to the etiology of functional articulatory defects. In the chapter of "Disorders of Articulation" authored by Curtis in Speech Handicapped School Children, he states that "most articulatory deviations seem to be traceable to no other cause than failure to learn the correct patterns of normal speech."² Regarding the causes of children's functional articulation problems, Clark believes that they are attributed to various causes, which may be classified into two major groups: "physiological

¹Darrel J. Mase, "Disorders of Articulation," Voice and Speech Disorders: Medical Aspects, ed. Nathaniel M. Levin (Illinois: Charles C. Thomas, Publishers, 1962), p. 604.

²James F. Curtis, "Disorders of Articulation," Speech Handicapped School Children, ed. Wendell Johnson (3rd ed. rev.; New York: Harper and Row, Publishers, 1967), p. 127.

and psychological."¹ She seems to adhere to the physiological theory, and more specifically to that philosophy which holds that "retarded development of certain basic abilities is a major factor in causing a majority of so-called functional articulatory defects."²

In speaking of the causes of articulation defects Ainsworth says that "all articulatory defects may be said to be the direct result of wrong placements of the speech mechanisms at the particular instant a sound is produced and/or wrong movements--inadequate movements, wrong timing, voicing of unvoiced sounds, et cetera."³

Anderson says, illustrating the causes of children's speech problems, the following:

Most speech defects found among the school population are not particularly complicated or deep seated. . . . In other words, approximately 75 per cent are merely of the bad-habit type, resulting from imitation of poor speech models, or induced generally by carelessness, laziness, or indifference.⁴

¹Ruth Marie Clark, "Maturation and Speech Development," Psychological and Psychiatric Aspects of Speech and Hearing, ed. Dominick A. Barbara (Illinois: Charles C. Thomas, Pub., 1960), p. 232.

²Ibid., p. 233.

³Stanley Ainsworth, "Articulatory Defects," Speech Correction Methods (New York: Prentice-Hall, Inc., 1948), p. 57.

⁴Virgil A. Anderson, Improving the Child's Speech (New York: Oxford University Press, 1953), p. 13.

Need for the Study

To illustrate that the majority of speech problems in the public school are of the articulatory type, Eisenson and Ogilvie say that "articulatory defects present one of the most important problems of the speech correction program."¹ They further state that "in the school age population about three-fourths of all speech defects are of an articulatory nature."² In an article by Reid it was concluded that "functional articulatory defects comprise at least 50 per cent of the total cases of defective speech in the elementary school population."³ Black also points out the high percentage of articulation cases in the public school situation by reporting that "82 per cent of cases in the public school are articulation."⁴ An estimate of school-age children with speech defects was included in the American Speech and Hearing Association's Committee Report on the

¹Eisenson and Ogilvie, Speech Correction in the Schools, p. 23.

²Ibid., p. 133.

³Gladys Reid, "The Efficacy of Speech Re-education of Functional Articulatory Defectives in the Elementary School," Journal of Speech and Hearing Disorders, XII (September, 1947), 302.

⁴Martha E. Black, Speech Correction in the Schools (New Jersey: Prentice-Hall, Inc., 1964), p. 302.

Midcentury White House Conference on Children and Youth.¹

The report pointed out that 5 per cent of the children (assumed population of forth million children, ages five to twenty-one), have speech problems. Of the 5 per cent or the two million children with speech problems, the ASHA committee reported the following estimates as to the various types of deviations:

Incidence of the Various Types of Speech Disorders

Type of Problem	Percentage
Functional articulatory	3.0
Stuttering.	.7
Voice	.2
Cleft palate speech	.1
Cerebral palsy speech	.2
Retarded speech development	.3
Impaired hearing with speech defect .	.5
	<u>5.0</u> ²

According to these figures, functional articulatory defects exceed all other categories combined. In view of the fact that the public school speech therapist attempts to give help, not only to children with so-called functional articulatory defects, but to all children in her district who need this assistance, she is constantly seeking the most effective and efficient methods to meet the individual needs of children enrolled in the therapy program. It would, therefore, seem to be indicated that the public school

¹Committee on White House Conference, "Speech Disorders and Speech Correction," Journal of Speech and Hearing Disorders, XVII (June, 1952), 129-137.

²Ibid., p. 130.

speech therapist needs help in dealing with this apparently large group of children with articulatory defects.

As a practical matter, the public school speech therapist needs help. In the Richardson School District, the locale for this study, the eight therapists carry an average case load of 116 children per week.¹ The majority of these children were reported as having functional articulatory defects.² They are seen twice a week for thirty minutes. The children are generally in a group of three to six other students. It would seem most difficult that in these brief meetings even the most skillful and adept speech therapist, unaided, could observe any prompt and significant carryover of the new speech habits she has been attempting to teach the child.

One possible means of aiding the public school speech therapist in dealing with her heavy case load would be to secure the help of the classroom teacher. A number of sources advocate the importance of the classroom teacher's role in the correction of speech problems in school children.³ However, in many instances with overcrowded

¹Betty Jo Hitt, Coordinator of Special Education of the Richardson Independent School District, private conference, June, 1968.

²Ibid.

³Agnes C. Rigney, "The Classroom Teacher and Speech Correction: A Bibliography," The Speech Teacher, III (January, 1944), 41-44; R. B. Parsons, "An Experiment in

classrooms and a busy curriculum it is impossible for a classroom teacher to render special service to an individual child with a speech problem. Even if the teacher could give assistance in the correction of speech problems, it is doubtful that this would be considered a reliable source of help. In Lloyd and Ainsworth's¹ study of fifty-four classroom teachers it was pointed out that the use of teachers as a source of help for the speech therapist appeared to be an unreliable one a great part of the time. Regarding classroom teacher help, Houchin² stresses the importance of leaving teachers alone in the speech correction program. Houchin states the following:

The main share of the burden in public school speech correction must fall eventually on the speech correctionist, the child, and the parent. The teacher in the classroom must not be expected in many cases to cooperate remedially. . . .³

Speech Education in the Elementary Schools," Quarterly Journal of Speech, XXXI (April, 1945), 216-222; Magdalene Kramer, "Speech Education in the Elementary Schools," Teachers College Record, XLII (March, 1941), 506-515.

¹Gretchen Wright Lloyd and Stanley Ainsworth, "The Classroom Teacher's Activities and Attitudes Relating to Speech Correction," Journal of Speech and Hearing Disorders, XIX (June, 1954), 246-248.

²Thomas D. Houchin, "Cooperation in a Public School Speech Correction Program," Journal of Speech and Hearing Disorders, XIII (September, 1948), 248.

³Ibid.

In view of the fact that the classroom teacher does not appear to have the time or formal training necessary to effectively give aid to the public school speech therapist, it would seem worthwhile to explore the possibility of securing the parent as a means of giving help in this remedial speech program.

Nature of the Problem

It is the purpose of this study to investigate the efficacy of a program of parent-supervised speech homework assignments with articulatory defective children in the public school setting. This study will attempt to answer the following question: Does an experimental group of children who receive articulation therapy and parent-supervised speech homework assignments make greater speech improvement than a matched control group of children who do not receive the supplemental homework assignments?

The null hypothesis to be investigated is: That there is no significant difference in speech improvement between functional articulatory defective children in the public school setting who receive articulation therapy and parent-supervised home assignments, than children who receive articulation therapy and do not receive home speech assignments.

In the opinion of the writer, this research may make a worthwhile contribution to the field of public school speech and hearing therapy in that the school therapist may

be able to utilize the findings of this investigation to help make her remedial speech program more effective. From the results of this study, the speech therapist may learn one of two things: (1) to expend more of her energies in the development and evaluation of effective speech homework assignments; (2) to abolish the homework assignments and put forth all efforts toward the success of the articulation therapy program at school exclusively.

CHAPTER II

RELATED RESEARCH

Among several professional sources, there appears to be an agreement concerning the advantage of the parent accepting considerable responsibility in the speech therapy program.¹ Along this same line of thinking, Powers² believes that the "cooperative nature of articulation therapy" infers that parents should participate actively at an appropriate point in therapy in assisting the therapist with the correction of a problem. Black supports this point of view by saying that "for successful therapy the cooperation of the child's parents is necessary. They must understand what is being done and why, and give whatever assistance

¹Mildred F. Berry and Jon Eisenson, Speech Disorders: Principles and Practices of Therapy (New York: Appleton-Century-Crofts, Inc., 1956; Robert West, Merle Ansberry, and Anna Carr, The Rehabilitation of Speech (New York: Harper and Brothers, 1957); J. H. Egbert, "The Effect of Certain Home Influences on the Progress of Children in a Speech Therapy Program," (Ph.D. dissertation, Stanford University, 1957).

²Margaret H. Powers, "Clinical and Educational Procedures in Functional Disorders of Articulation," Handbook of Speech Pathology, ed. Lee Edward Travis (New York: Appleton-Century-Crofts, Inc., 1957), p. 800.

they can."¹ Likewise, Canfield has expressed his belief that effective methods should be developed for "helping all parents to make positive and meaningful contributions to the process of speech development and improvement of their children."² Curtis points out that "both clinical experience and research studies have demonstrated the importance of enlisting the active cooperation of parents."³ Anderson implies parental reinforcement in the speech therapy program by mentioning that "the co-operation of the parents may . . . need to be enlisted if the child is to practice his good speech habits at home."⁴

A number of authorities have stressed the importance of the parent participating actively in the speech therapy program for their children by helping with speech homework assignments. Curtis is one authority who has expressed his belief that the parent can help the young child in the therapy program by checking on his "success in carrying out the particular assignment of the moment and reporting back

¹Martha E. Black, Speech Correction in the Schools (New Jersey: Prentice-Hall, Inc., 1964), p. 109.

²William H. Canfield, "Some Parental Concepts of Speech Problems," Speech Pathology and Therapy, VI (October, 1963), 68.

³James F. Curtis, "Disorders of Articulation," Speech Handicapped School Children, ed. Wendell Johnson (3rd ed. rev.; New York: Harper and Row, 1967), p. 144.

⁴Virgil A. Anderson, "Articulatory Disorders," Improving the Child's Speech (New York: Oxford University Press, 1953), p. 154.

to the speech clinician."¹ West, Kennedy and Carr say that "parental cooperation, if it can be secured, is always desirable--for the best results it is essential. The cooperative parent . . . can see that the child carries out the clinician's instructions for 'homework.'"²

In an article by Allen, there are listed a number of suggestions to the classroom teacher on how to help create a positive wholesome attitude about the speech program in the public school. One suggestion was: "Encourage parents to cooperate by assisting with assignments to be carried out at home."³

Van Riper, likewise, believes that the speech therapy program "should also include the use of speech assignments in outside situations."⁴ He lists several activities for home speech periods and again in speaking of home speech assignments says the following:

The teacher should always make these assignments very definite and appropriate to the child's ability and environment. He should always ask for

¹Curtis, op. cit., p. 160.

²Robert West, Lou Kennedy, and Anna Carr, "The Rehabilitation Program," The Rehabilitation of Speech (New York: Harper and Brothers, Publishers, 1947), p. 297.

³E. Y. Allen, "Child with Speech Defects," National Education Association Journal, XXLVI (November, 1967), 36.

⁴Charles Van Riper, "Articulation Disorders," Speech Correction: Principles and Methods (3rd ed.; New Jersey: Prentice-Hall, Inc., 1954), p. 256.

a report the next day. Such assignments frequently are the solution to any lack of motivation the child may have.¹

An article has been written by Engel² and others concerning some suggestions and techniques to be utilized in the phase of articulation therapy where the child receives practice in using his newly learned speech sounds in his daily conversation. The significance of involving persons from the speech defective's environment to help in this process is stressed. It is pointed out in this article that the parent can "monitor speech and assignments being practiced out of the clinic."³

Regarding parent help in the speech therapy program, Wood⁴ has stressed the importance of counseling and educating the parent simultaneously with the child. He has stated that "in my clinical work I have found that progress with the child who has a functional speech defect is more successful when the parents are given clinical attention."⁵

¹Ibid., p. 257.

²Dean C. Engel, et al., "Carryover," Journal of Speech and Hearing Disorders, XXXI (August, 1966), 227-233.

³Ibid., p. 230.

⁴Kenneth Scott Wood, "The Parent in the Clinical Program," Western Speech, XI (November, 1947), 120-128; Kenneth Scott Wood, "The Parent's Role in the Clinical Program," Journal of Speech and Hearing Disorders, XIII (September, 1948), 209-210.

⁵Ibid., p. 209.

He has further stressed this point by saying that "I believe that it is necessary to deal extensively with the parent whether the speech correctionist is working under a clinic plan or in a public school system."¹ However, regarding parent help in the home Wood states the following:

It is recommended that the parent be dissuaded from trying speech correction procedures with the child in the home, and that instead the mother and father be encouraged to play the role of a better parent in constructing a happier home where the child will want to listen to what is said and will have a chance to respond to parents he loves.²

Nevertheless, in spite of the latter philosophy, it has been found that parents of deaf children and parents of cerebral palsy children are usually called upon to participate actively in their children's speech therapy program. Regarding home teaching of young deaf children, Bennett³ and Lassman⁴ are two authorities who stress the importance of utilizing the parent. Lassman points out that "teachers have begun to assign to parents a more active role in the

¹Ibid.

²Kenneth Scott Wood, "Parental Maladjustment and Functional Articulatory Defects in Children," Journal of Speech and Hearing Disorders, XI (December, 1946), 273.

³Daphne Nicholson Bennett, "Home Teaching of Young Deaf Children: A Pointer in Parent Education," Journal of Speech and Hearing Disorders, XXII (March, 1957), 68.

⁴Grace Harris Lassman, "Parent Participation in Teaching Speech to the Deaf Child," Journal of Speech and Hearing Disorders, XIII (December, 1948), pp. 366-368.

total development of their young deaf children."¹ She further makes the following statement:

In consideration of what has been done for deaf children through parent participation in every possible way, there would seem to be no valid justification for parents being restricted from teaching speech to their young deaf children.²

Regarding parent help with the home training of cerebral palsy children Levinson has reported that "as the intensive program of therapies and education proceeded at the cerebral palsy school units, the need for training parents, as well as children, became increasingly more apparent."³ In explaining the cerebral palsy training program Levinson said that "methods in the training program consisted of demonstrations; . . . and printed notes of suggestions for a home program."⁴

Thus we have seen that parents of children who are deaf or who have cerebral palsy are called upon to give assistance in the speech therapy program. It would, therefore, seem reasonable to secure the cooperation of parents with children having less severe speech problems

¹Ibid., 366.

²Ibid., 368.

³Helen J. Levinson, "A Parent Training Program for a Cerebral Palsy Unit," Journal of Speech and Hearing Disorders, XIX (June, 1954), 253.

⁴Ibid.

of the articulatory type. Irwin¹ supports this philosophy of actively engaging the parent in the speech therapy program in her discussion on "How Parents Can Help At Home." After quoting Wood² on the advisability of dissuading parents from attempting speech correction procedures at home, Irwin says the following:

However, if the parents are able to help, the therapist should demonstrate and explain what techniques can be used. Some time should also be spent in teaching the qualified parent how to be the clinician at home. . . .

.
Speech notebooks are frequently used as a method of securing home cooperation in speech assignments.³

A study performed by Roe⁴ illustrates the importance of utilizing the parent in the correction of functional articulatory disorders. She points out that "as soon as the child was performing the speech pattern with ease, the parents were sent suggestions as to concrete contributions which they might make. . . ."⁵ These suggestions given to

¹Ruth Becky Irwin, Speech and Hearing Therapy (New Jersey: Prentice-Hall, Inc., 1953), p. 194.

²Wood, "Parental Maladjustment and Functional Articulatory Defects in Children," pp. 255-275.

³Irwin, Speech and Hearing Therapy, p. 194.

⁴Vivian Roe, "Follow-up in the Correction of Functional Articulatory Disorders," Journal of Speech and Hearing Disorders, XIII (December, 1948), 332-336.

⁵Ibid., p. 335.

the parent by the speech therapist were game type activities that could be carried out at home which would reinforce the therapy program at school. Roe evaluated her experiment by pointing out the following:

The consistent weekly follow-up assisted greatly in maintaining the interest of both the parents and the child. The correction of errors was apparently more rapid than it would have been otherwise.¹

In Scott and Thompson's book, Talking Time, the authors state, "In all cases of speech deviations, the parents should be brought into the picture in order to continue the speech drills, in a play way, in the . . . home."²

It should be noted, as suggested in the above quotation, that frequently a play approach to the correction of speech problems is recommended because constant correction or nagging tends to produce in the child a negative attitude toward speech. Van Riper recommends that "the parents and teachers of the speech defective concentrate their reminding and correcting upon a few common words and upon certain nuclei speech situations."³

Likewise, in speaking of speech sessions at school and at home, Irwin and Duffy stress the importance of maintaining "an attitude of pleasant calmness during the

¹Ibid.

²Louise B. Scott and J. J. Thompson, Talking Time (Dallas: Webster Publishing Co., 1951), p. vii.

³Charles Van Riper, "Articulation Disorders: Treatment," Speech Correction: Principles and Methods (4th ed.; New Jersey: Prentice-Hall, Inc., 1963), p. 296.

entire process. Use as many attractive props and game situations as possible."¹

The author attempted to adhere to the previously mentioned approach both in the therapy sessions with the children involved in this study and in the construction of the home speech assignments. The therapy materials and the assignments were presented to the children in such a manner that gave the impression of games to be played rather than formal drills.

In the past years, there have been several studies performed with notable success in which the parents received various educational techniques of helping their articulatory defective children at home in conjunction with therapy received at school or in the clinic.² It is the opinion of this writer that the current study is different

¹John V. Irwin and John K. Duffy, "Articulatory Problems of Children," Speech and Hearing Hurdles: A Practical Guide for Teachers and Parents (Ohio: School and College Service, 1951), p. 36.

²Ronald K. Sommers, et al., "Training Parents of Children with Functional Mis-Articulation," Journal of Speech and Hearing Research, II (September, 1959), 258-265; L. C. Tufts and A. R. Holiday, "Effectiveness of Trained Parents as Speech Therapists," Journal of Speech and Hearing Disorders, XXIV (November, 1959), 395-401; Herold Lillywhite, "Make Mother a Clinician," Journal of Speech and Hearing Disorders, XIII (March, 1948), 61-66; William L. Shea, "The Effect of Supplementary Parental Corrective Procedures on Public School Functional Articulatory Cases," (unpublished Ph.D. dissertation, University of Florida, 1957).

from the previous research on the subject, due to the fact that no attempt has been made to formally educate the parents in techniques of articulation therapy. It is the aspiration of this investigator that the present study is an accurate example of the typical public school situation, and that the parents involved have responded to the speech therapy home assignments without previous knowledge of the study.

CHAPTER III

METHODS AND PROCEDURES

Subjects

Forty children were selected for this study from two elementary schools in the Richardson Independent School District. These subjects were selected from a list of second grade students who were previously diagnosed as having functional articulation problems during the speech screening program in the Richardson Public Schools. Some of the subjects were chosen from referrals submitted by the classroom teachers, building principals, and parents. The socio-economic status of the area from which the subjects were drawn is considered to be within the middle of the upper middle level.¹

The forty children selected for this study were divided into two groups of twenty having twelve males and eight females in each group. For the convenience of the therapist an attempt was made to designate one group of twenty students at one elementary school as the experimental

¹Southern Association of Schools and Colleges. Southern Association Evaluation of Wallace Elementary School. (Richardson, Texas: Richardson Independent School District, 1966-1967), p. 1.

group and the remaining group of twenty at the other elementary school as the control group. However, due to a difference in pupil enrollment in the two schools this plan was not feasible. Therefore, it was decided that the school with the larger pupil enrollment would have both experimental and control subjects. The elementary school with the smaller pupil enrollment was selected for the control group of subjects exclusively.

The subjects in the control group were matched with subjects in the experimental group according to the following criteria: (1) They were members of the same sex. That is to say, a male in the experimental group was matched with a male in the control group, et cetera. (2) They were all beginning their second year in school. (3) All subjects were members of the Caucasian race. (4) Their chronological age ranged from six years, ten months, to seven years, ten months. (5) The intelligence quotient of the subjects fell within the range of 90 to 110 as indicated by the California Test of Mental Maturity which is administered by the school district. (6) The articulation errors were limited to the following consonant sounds: [r], [l], [s], [z], [f], [v], [p], [t], [d], [θ], and [ð]. Students having articulation errors other than these were not included in the study. These articulation errors could have occurred in blends and/or singles. (7) The subjects were matched according to the degree of severity of articulation error as determined by

the score on the Templin-Darley Screening Test of Articulation.¹ A difference not to exceed five points on the articulation test was allowed between members of matched pairs. (8) All subjects had normal auditory acuity as determined by sweep check audiometry administered by the school nurse. (9) The subjects had normal functioning of the peripheral speech mechanism as determined by the Oral Mechanism Examination² used by the Richardson Public School therapists. No child was included in the study who gave evidence of visceral swallowing or severe dental malocclusions. No child was included in the study who possessed an obvious physical defect. None of the children chosen for the study had received previous speech therapy.

Test Instruments

The children selected for this study were given the Templin-Darley Screening Test of Articulation³ in the same manner described in the manual before entering the public school therapy program in September, 1967, and again seven months later. This articulation test was chosen by the investigator because it has been represented as a standardized,

¹Mildren C. Templin and Frederic L. Darley, The Templin-Darley Tests of Articulation (Iowa: Bureau of Educational Research and Service, Extension Division, State University of Iowa, 1960).

²Special Education Handbook (Richardson, Texas: Richardson Independent School District).

³Templin and Darley, op. cit.

reliable means of rapidly evaluating the speech of children. This test was developed "to describe and evaluate the important aspects of an individual's speech performance--his production of the speech units of language."¹ Templin and Darley believe that the screening portion is an excellent and quick method of evaluating speech.²

Prior to entering the therapy program in September, the selected subjects were also given an Oral Mechanism Examination³ which is used by the public school therapists in the Richardson Independent School District. It is considered a quick and concise test for evaluating the function, size and motility of the peripheral speech mechanism necessary for the articulation of speech sounds. A copy of this test form is included in Appendix I of this paper.

Therapy

Speech therapy was initiated by this investigator two weeks following the opening of the 1967-1968 school term. All subjects were seen, in groups of three to five, two times per week for a period of thirty minutes each session.

¹Ibid., p. 1.

²Ibid., p. 14.

³Special Education Handbook, op. cit.

Control Group. The control group of subjects received group articulation therapy, during which time remedial methods were employed as suggested by Van Riper¹ and Berry and Eisenson.² The error sound was defined. Auditory training procedures for identifying the standard pattern of the sound were employed. The subjects were given experiences of comparing their own utterance of the error sound with the accepted standard pattern of the sound, to vary their utterance and to correct it in isolation, syllables, words, sentences, poems, oral reading and conversation. To facilitate these procedures in the therapy program speech games, mirrors, and audio-visual aids were utilized.

Experimental Group. The experimental group of subjects received the same type of group articulation therapy by the same therapist as previously described for the control group. In addition to the therapy methods, supplementary home speech assignments were given to the children in this group at a point in the therapy program when all of these students were correctly producing their speech sounds in isolation. The first homework assignments

¹Charles Van Riper, Speech Correction: Principles and Methods (4th ed. rev.; New Jersey: Prentice-Hall, Inc., 1963), pp. 242-300.

²Mildred F. Berry and Jon Eisenson, Speech Disorders: Principles and Practices of Therapy (New York: Appleton-Century-Crofts, Inc., 1956), pp. 113-186.

were given to the students at the beginning of the third month of school and were continued for five months thereafter. The students were not given the assignments over school holidays. The children received the home speech assignments at the end of the therapy sessions twice a week. In addition, the students received instructions from the therapist regarding the assignment due for the next therapy class at the close of the day's speech therapy session. Approximately three to five minutes of class time was allowed for the explanation of the homework assignments. The series of twenty-eight progressive homework assignments were placed, one at each session, in the speech notebook of each child in order to facilitate the transporting of these assignments from school to home and back again.

On each assignment page, space was provided for the parent signature to indicate the child's completion of the assigned homework. Precise and simple instructions on how to carry out the assignment was included on each homework paper for the benefit of the child and the parent.

It should be noted that the investigator attempted to devise the speech homework assignments in a manner that would secure the help of the parent primarily in a supervisory capacity. That is to say, the purpose of the home assignments was to provide the students with practice material that would supplement the therapy received at school and could be easily carried out at home with the

parent acting as an interested listener, not as a teacher.

A sample of the twenty-eight consecutive assignments for the [s] and [z] sounds can be found in Appendix II of this paper.

Statistical Treatment

It was decided that a t-formula would be used as a test to determine the significance of the difference between the mean of the articulation improvement scores of the control group and the mean of the articulation improvement scores of the experimental group. The .05 significance level was selected as necessary for the rejection of the null hypothesis.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF THE DATA

Forty children were selected for this study who were diagnosed as having functional defects of articulation. The forty subjects were divided into two groups of twenty. One group of twenty students were designated the control group. These students were matched with twenty students who were selected for the experimental group. The Templin-Darley Screening Test of Articulation¹ was given to each student in September of the 1967-1968 school year and again seven months thereafter. The control and the experimental group of subjects were matched according to the articulation scores achieved on the articulation test and according to the following criteria: sex, race, age range, I.Q. range, grade in school, socio-economic background, auditory acuity, and oral mechanism functioning. After the division of the forty subjects into the control and experimental groups, formulas were used to test the significance of the difference between the means of the two groups in regard to (1) the I.Q.'s of the subjects, (2) the chronological ages of the subjects, and (3) the articulation scores of the

¹Templin and Darley, op. cit.

subjects. There was no significant difference between the two groups in any of the variables as shown in Tables I, II, and III.

During a period of seven months both the control and experimental subjects received the same amount and quality of speech therapy from the same therapist. In addition to therapy, the experimental group of students received twenty-eight supplementary home speech assignments. Both the control and experimental groups were then given the Templin-Darley Screening Test of Articulation¹ at the end of the seven month period. Their test scores were computed according to the directions in the manual.

In order to determine the significance of the amount of speech improvement made by the children in both the control and experimental group, a t-test was used to determine if the difference between the mean of the original articulation test scores and the mean of the final articulation test scores was significant for either the experimental or the control group. It was found that both groups made significant improvement at the .05 level of confidence. These data are presented in Tables IV and V.

¹Templin and Darley, op. cit.

TABLE I

I.Q. DIFFERENCES OF THE CONTROL AND EXPERIMENTAL GROUP

Group	N	Range	Mean		Standard error of the mean	Standard error of the diff. of the means	Critical Ratio
Control	20	92-110	103.9	5.905	4.91		
Experimental	20	92-110	105.8	6.195	5.5	1.9824	.9669*

*No significant difference.

TABLE II

CHRONOLOGICAL AGE DIFFERENCES OF THE CONTROL
AND EXPERIMENTAL GROUP IN MONTHS

Group	N	Range	Mean		Standard error of the mean	Standard error of the diff. of the means	Critical Ratio
Control	20	82-94	88.75	3.715	.852		
Experimental	20	84-94	88.65	1.06	.772	1.149	.087*

*No significant difference.

TABLE III

DIFFERENCE BETWEEN THE ORIGINAL ARTICULATION TEST SCORES
IN THE CONTROL AND EXPERIMENTAL GROUP

Group	N	Range	Mean	Error of the mean	σ	Mean Devia- tion	Variance	$\sim$ Diff.	Critical Ratio
Control	20	19-45	36.0	1.11	4.832	6.0	23.350		
Experimental	20	20-41	35.6	1.03	4.478	5.7	20.050	1.51	.26*

*No significant difference.

TABLE IV

DIFFERENCES BETWEEN ORIGINAL AND FINAL ARTICULATION
TEST SCORES IN THE CONTROL GROUP

Scores	N	Range	Mean	Error of the mean	σ	Mean Devia- tion	Variance	σ Diff.	Critical Ratio
Original	20	19-45	36.0	1.11	4.832	6.0	23.350		
Final	20	22-50	44.5	1.64	7.152	4.7	51.150	1.98	4.29*

*Significant at the .05 level of confidence.

TABLE V

DIFFERENCES BETWEEN ORIGINAL AND FINAL ARTICULATION
TEST SCORES IN THE EXPERIMENTAL GROUP

Scores	N	Range	Mean	Error of the mean	σ	Mean Devia- tion	Variance	σ Diff.	Critical Ratio
Original	20	20-41	35.6	1.03	4.478	5.7	20.050		
Final	20	40-50	47.8	.74	3.233	7.9	10.450	1.27	9.61*

*Significant at the .05 level of confidence.

According to the previous figures, it should be noted that the articulation improvement of the experimental group was greater than the articulation improvement of the control group. A t-test was then applied to the difference between the mean gains of the control group and the experimental group. The results are presented in Table VI.

There was a difference of 3.65 points in the mean gain of the experimental group when compared to the mean gain of the control group. Therefore, the statistical evidence indicates that the students with functional articulatory problems in the experimental group who received supplementary home speech assignments made significantly more improvement than the students in the control group. The critical ratio of 2.407 is significant at the .05 level of confidence.

The null hypothesis investigated in this study was stated thus: There is no significant difference in speech improvement between functional articulatory defective children in the public school setting who receive articulation therapy and parent-supervised home assignments, and children who receive articulation therapy and do not receive home speech assignments. According to the statistical analysis of this study, the null hypothesis is rejected.

TABLE VI

ARTICULATION IMPROVEMENT SCORES FOR THE FORTY SUBJECTS

Group	N	Range	Mean Gain	Error of the Mean		Variance	 Diff.	Critical Ratio
Control	20	22-50	8.55	1.09	4.75	22.62		
Experimental	20	40-50	12.20	1.06	4.60	21.16	1.144	2.407*

*Significant at the .05 level of confidence.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate the efficacy of a program of parent-supervised speech homework assignments with articulatory defective children in the public school setting. More specifically, this study was designed in an effort to answer the following question: Does an experimental group of children, who receive articulation therapy and parent-supervised speech homework assignments, make greater speech improvement than a matched control group of children who do not receive the supplemental homework assignments?

The null hypothesis investigated in this study was stated thus: There is no significant difference in speech improvement between functional articulatory defective children in the public school setting who receive articulation therapy and parent-supervised home assignments, and children who receive articulation therapy and do not receive home speech assignments.

In order to answer the question proposed in this study, forty children were selected as subjects from two

elementary schools in the Richardson Independent School District. These forty children were divided into two groups of twenty having twelve males and eight females in each group. One group of twenty students was designated the control group, the remaining twenty children comprised the experimental group. The subjects in the control group were matched with subjects in the experimental group according to their test scores as determined by the Templin-Darley Screening Test of Articulation.¹ The children were also matched according to the following criteria: sex, race, age range (six years, ten months to seven years, ten months), I. Q. range (90-110), articulation errors limited to the [r], [l], [s], [z], [f], [v], [ʃ], [tʃ], [dʒ], [θ], and [ð] sounds, normal auditory acuity, and normal functioning of the peripheral speech mechanism. No child was included in the study who possessed an obvious physical defect. None of the children had received previous speech therapy.

Both the control and experimental group of subjects received the same amount and quality of speech therapy for a period of seven months. In addition to therapy at school, the experimental group received twenty-eight supplementary home speech assignments that required parent supervision. The first assignments were given to the children at the beginning of the third month of school and were continued

¹Templin and Darley, op. cit.

for five months thereafter.

At the end of seven months both the control and experimental groups were retested with the Templin-Darley Screening Test of Articulation¹ and their scores were computed according to the directions in the test manual. A statistical analysis was carried out on the pre and post articulation test results. It was found that the experimental group of subjects who received the home speech assignments made greater improvement in articulation than the control group. It was further found that when a t-test was applied to determine the difference between the mean gains of the control group and the experimental group a statistically significant difference was evident at the .05 level of confidence. Therefore, the null hypothesis was rejected.

Conclusions

This study was designed to answer the following question: Does an experimental group of children, who receive articulation therapy and parent-supervised speech homework assignments, make greater speech improvement than a matched control group of children who do not receive the supplemental homework assignments? On the basis of the statistical evidence this study has shown that there was a significant difference between the articulation improvement

¹Templin and Darley, op. cit.

made by an experimental group of children who received a program of parent-supervised home speech assignments and a control group of children who did not receive such assistance. This study suggested that it would be worthwhile for the public school speech therapist to incorporate into the articulation therapy program effective home speech assignments.

Recommendations

During the course of this study, the investigator observed that the parents of the children who were dismissed from speech therapy seemed to display sincere enthusiasm over the home speech assignments. They indicated to the therapist their eagerness to actively participate in their children's speech therapy program through the home speech assignments. It was further observed that the students in the experimental group seemed to enjoy receiving the home speech assignments and expressed disappointment when the therapist stopped assigning the homework.

Therefore, since the parents expressed the desire to be involved actively in their children's speech therapy program, for further studies it might be feasible to determine the degree of their willingness to participate. In future studies, parents might be more actively involved in their children's speech therapy program through parent

conferences and observations of therapy, during which time the parent would receive instruction from the therapist regarding speech therapy methods and techniques.

It is further recommended that for future studies tape recordings of the students' connected discourse be made and evaluated by a group of judges. It is felt this method would be a more accurate and less subjective measure of determining articulation improvement.

APPENDIX I

Oral Mechanism Examination

Name _____ Date _____ Grade _____

School _____ Examiner _____

Examination of lips:

General Condition: _____

Performance during p, b, m: _____

Examination of jaws:

Normal occlusion: _____

Neutroclusion: _____

Distocclusion: _____

Mesiocclusion: _____

Examination of Teeth:

Anterior Teeth:

Protrusion: _____

Overjet: _____

Openbite: _____

Closebite: _____

Crossbite: _____

Endentulous spaces: _____ If so where? _____

Lack of proximal contact: _____

Malalignment: _____

Jumbling: _____

Supernumery teeth: _____ If so where? _____

Does tongue habitually plug gap in teeth during silence or in making the following sounds: s, z, ch, sh, j, zh? _____

Examination of tongue:

Abnormal width: _____

Abnormal length: _____

Atrophy: _____

Unilateral sluggishness or paralysis: _____

Ability to groove tongue: _____

Characteristic position of tongue in rest: _____

Ability to extend tongue out _____ up _____ down _____

Ability to touch hard palate with tongue tip easily: _____

Examination of hard palate:

Abnormal height: _____

Abnormal width: _____

Evidence of present or past cleft: _____

Examination of soft palate and pharyngeal wall:

Abnormalities noted: _____

Ability to pant orally: _____

Examination of velum:

Cleft: _____

Too short: _____ Too long: _____

Uvula abnormality: _____

Uvula atrophy: _____

Uvula asymmetry: _____

Action during production of k and g sounds: _____

Does gag reflex exist? _____

Examination of pharynx:

Presence of tonsils and adenoids: _____

Inflammation of tonsils: _____

Presence of nasal drip: _____

Relationship of structural deviations found to the subject's speech defect:

Disabling: _____

Severe: _____

Slight: _____

No effect on speech: _____

APPENDIX II

Home Speech Assignments 1-28

DIRECTIONS: Write the letter "s" as you say the sound. Fill each line. Be sure to say the "s" sound correctly. Ask mother or father to listen to you as you play the game. Draw a picture of the way your mouth looks when you say your special sound correctly.

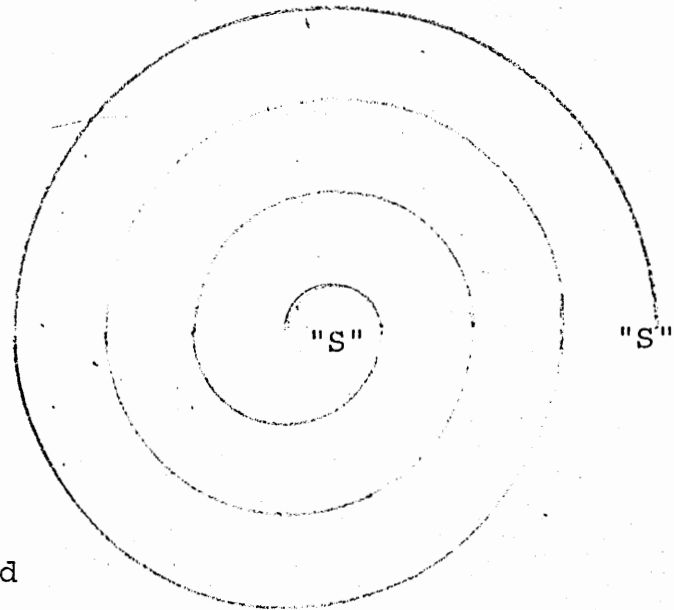
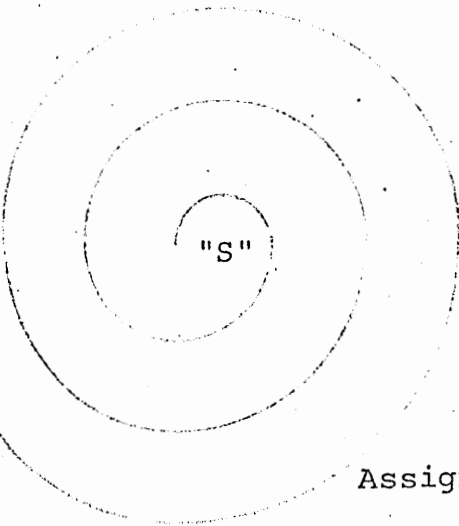
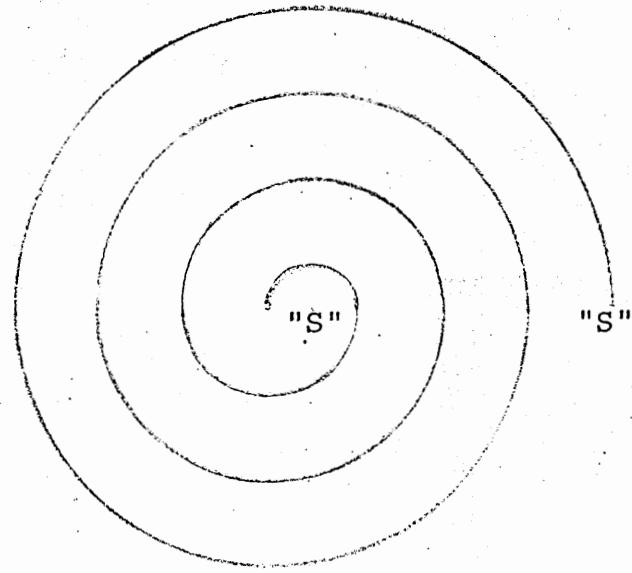
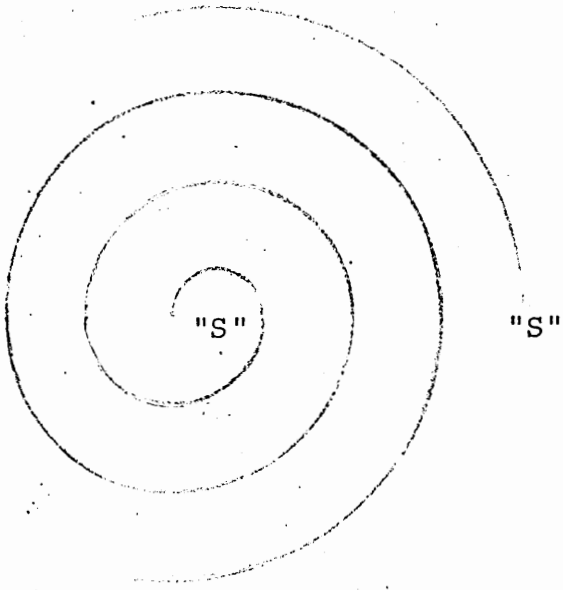
ture of mouth)

Write and Say the New Sound Here:

Assignment Completed

DIRECTIONS: Say your "s" sound as you trace the line. Be sure to say your "s" sound correctly. Ask mother or father to listen to you as you play the game. Draw a picture of the way your mouth looks when you say your "s" sound correctly.

(Picture of Mouth)



Assignment Completed

Parent Signature

DIRECTIONS: Say and write your "s" sound as you climb the ladder, then slide into a vowel. Say your "s" sound with the vowel. Be sure to say your sound with each vowel. Ask mother or father to listen to you as you play the game. Be sure to say your "s" sound correctly.

a

e

i

o

u

Assignment Completed

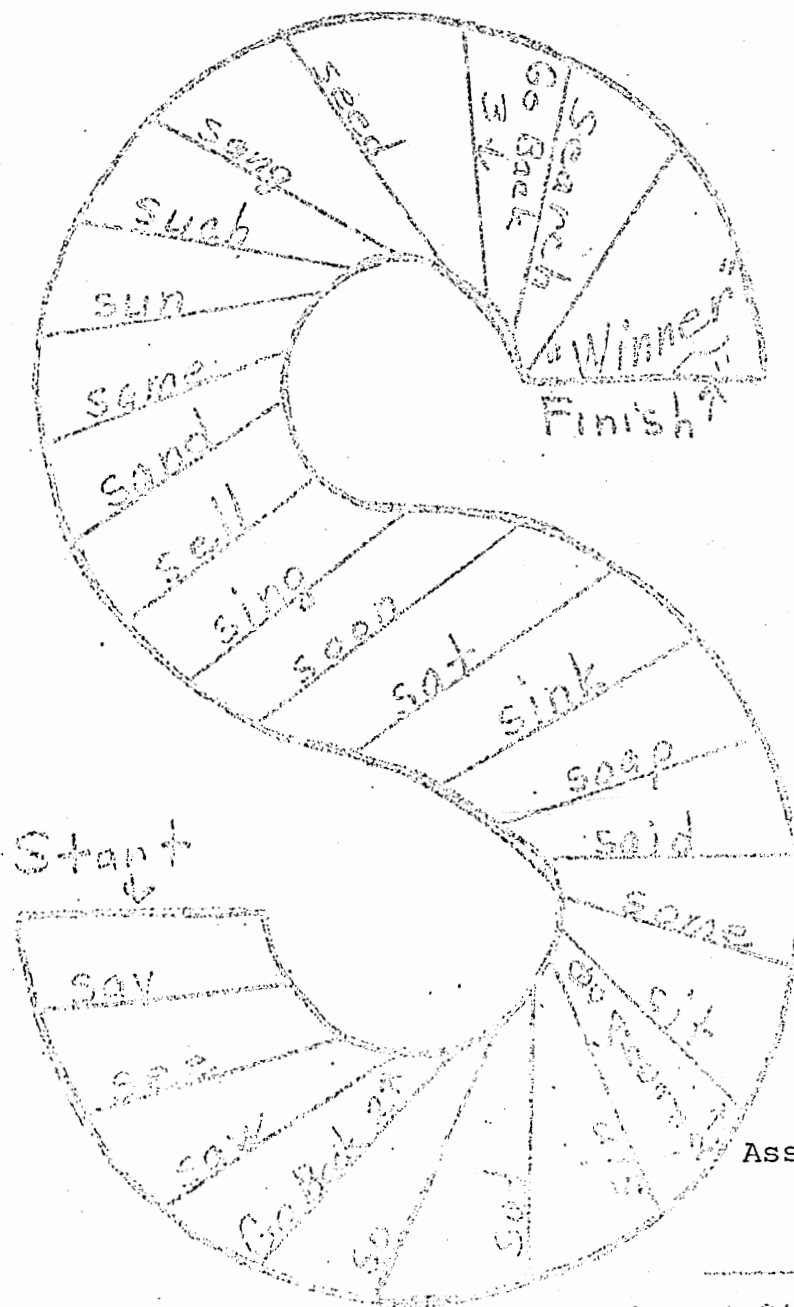
Parent Signature

DIRECTIONS: Find (4) pictures of things that begin with your "s" sound from old magazines, picture books, or newspapers. Cut them out and paste them on this paper. Write the name of each picture under the picture. Ask mother or father to listen as you say the name of each picture correctly.

Assignment Completed

Parent Signature

Use die or a spinner from another game at home to see how many spaces you will get to move. Say your beginning "S" words correctly as you play the game with mother, father, or some other family member. Use some object to mark your place on the game. Have fun! See who can be the winner.



Assignment Completed

Parent's Signature

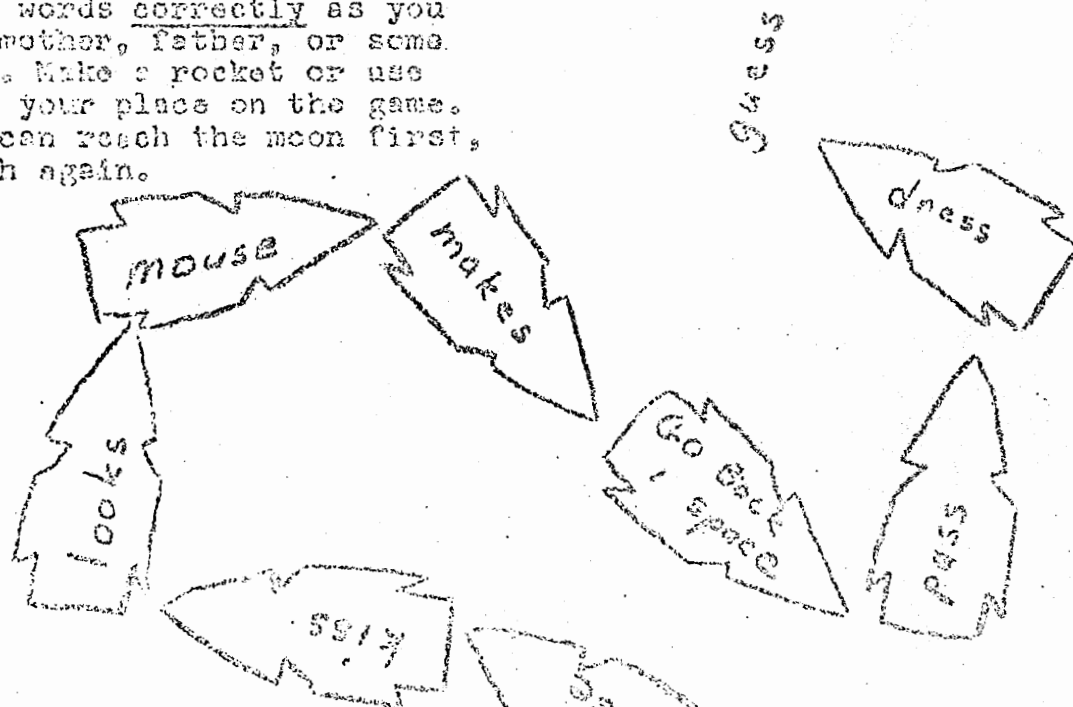
DIRECTIONS: Find (4) pictures of things that end with your "s" sound from old magazines, picture books, or newspapers. Cut them out and paste them on this paper. Write the name of each picture under the picture. Ask mother or father to listen as you say the name of each picture correctly.

Assignment Completed

Parent Signature

"ROCKET TRIP"

a rocket trip to the moon! Use a die spinner from another game at home to how many spaces you will get to move. y your ending "S" words correctly as you the game with mother, father, or some family member. Make a rocket or use any object to mark your place on the game. ve fun! See who can reach the moon first, return to earth again.



Assignment Completed

Parent Signature



DIRECTIONS: Find (4) pictures of things that have your "s" sound in the middle position from old magazines, picturebooks, or newspapers. Cut them out and paste them on this paper. Write the name of each picture under the picture. Ask mother or father to listen as you say the name of each picture correctly.

Assignment Completed

Parent Signature

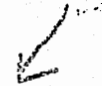
"S" DUCK GAME

Help Mrs. Duck find her way to water. Use a die or spinner from another game at home. Say your "S" sounds correctly in the middle of these words as you play the game with mother, father, or some other family member. Use some object to mark your place on the game. See who can reach the water first.

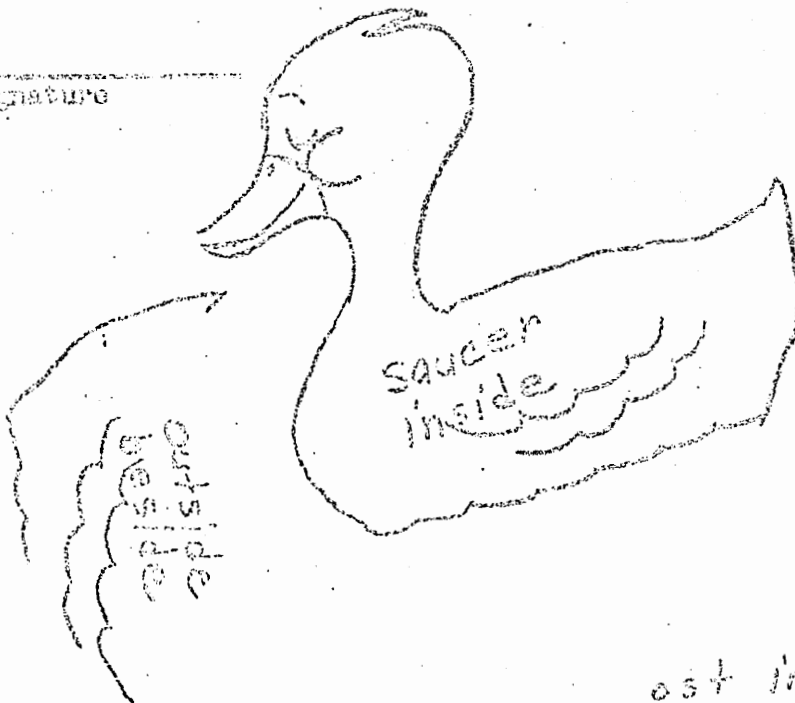
Assignment Completed

Parent Signature

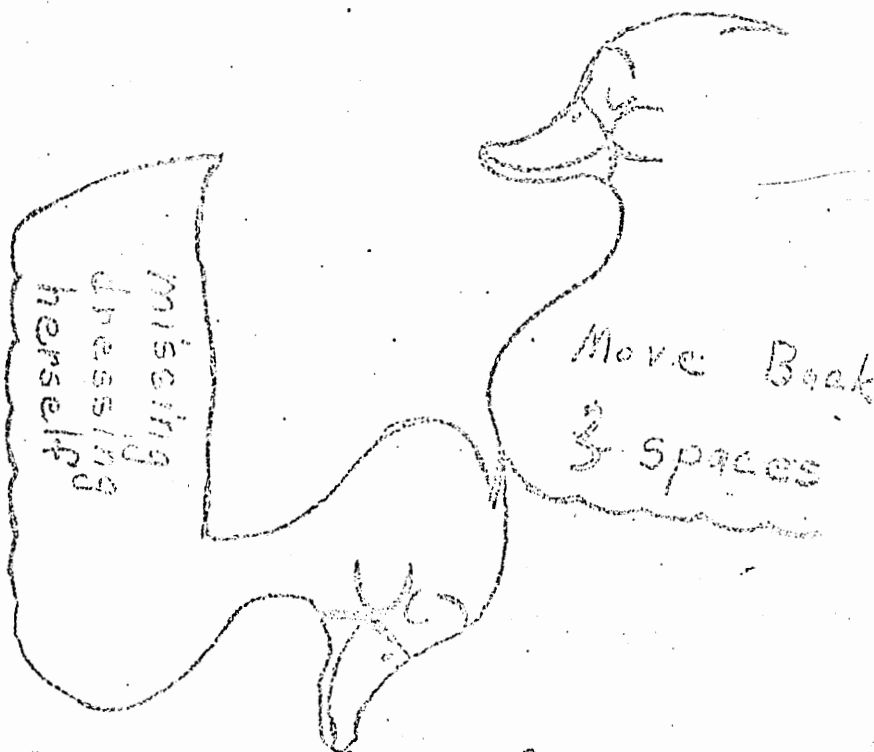
START



Sunset
Seesaw



lost in the fo
lowe I turn



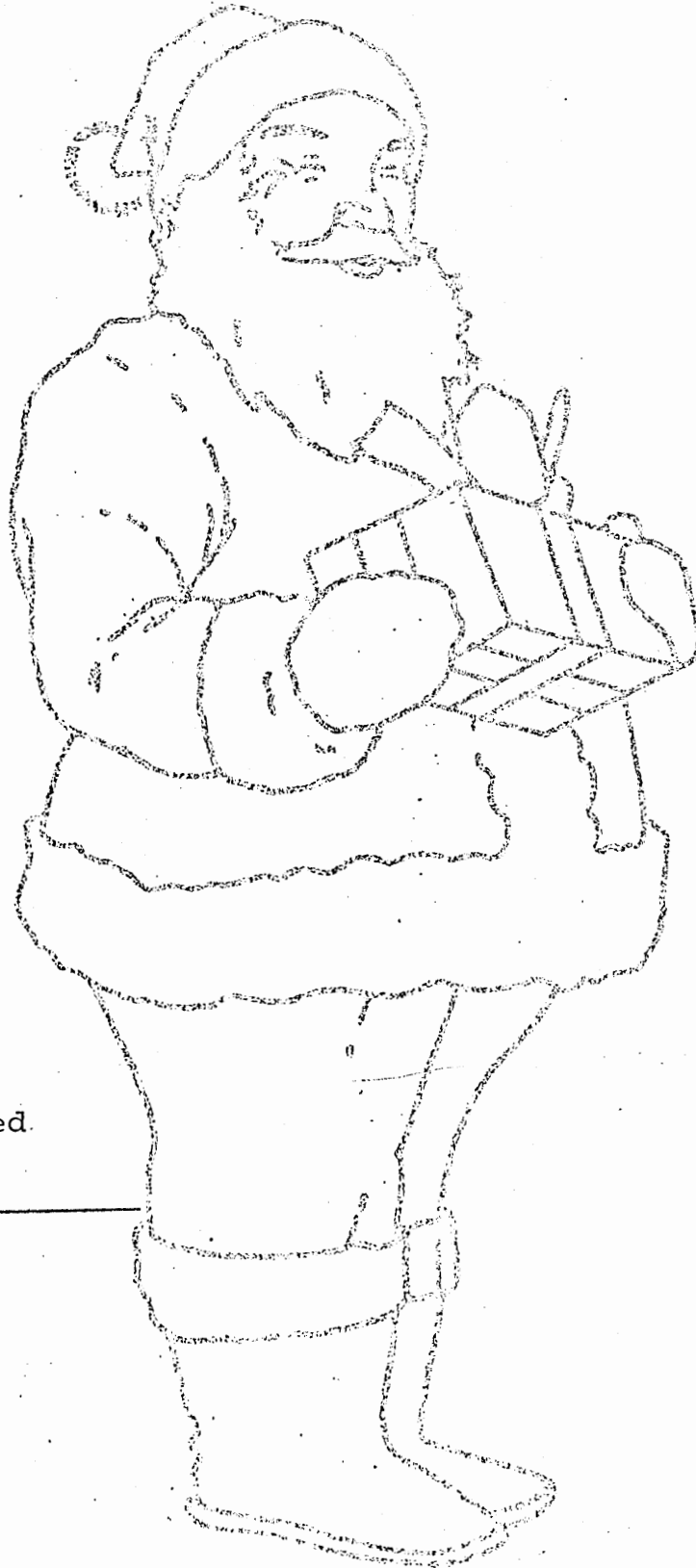
bicycle
Bessie
Christmas

WATER

crossin

52

DIRECTIONS: Make a Christmas list of gifts you would like Santa to bring you containing your "s" sound. Ask mother or father to listen to you as you name each gift. Be sure to say your "s" sound correctly.



Assignment Completed.

Parent Signature

TO THE PARENT: Directions for, "I See Something You Don't See Game."

The object of this game is to encourage the speech student to say his "S" sound correctly in words and sentences.

Any number of players may participate in this game. The parent says, "I see something you don't see. Guess what it is." The child answers, "Do you see a _____?" and names some object or picture in the room whose name contains the "S" sound.

The child should be allowed 5 guesses. If the object is guessed correctly, the child then gets to be "it" and the parent has a turn at guessing objects with the special speech sound. If the child or parent does not guess correctly within the allotted number guesses, the person who was "it" gets to have another turn.

It is most important to encourage the CORRECT production of the special speech sound while playing the game. If the child does not say the sound correctly, ask him to repeat the word correctly.

Assignment Completed

Parent Signature

HOW THE "S" SOUND IS MADE: Widen the tongue and place it behind the upper teeth near the gum. Close the teeth lightly and blow down the center of the tongue with a slight hiss.

TO THE PARENT: Directions for, "Take A Trip To San Francisco Game."

The object of this game is to encourage the speech student to say all "S" sounds correctly in words and connected speech while playing the game.

Any number of players may participate in this game. The first player would start the game by saying, "I'm going to San Francisco and with me I will take a _____." (Name an object that has the "S" sound. For example, "a pair of socks.")

The second player would repeat all that has been previously said and add one more "S" object. For example, "I'm going to San Francisco and with me I will take a pair of socks and a _____." (Example, "sweater")

The next player would then repeat all that has been previously named and add another "S" object.

The game continues like this until a player fails to name all objects to be taken on the trip that were previously named during the game. The player who lasts the longest in being able to name all the objects, is considered the winner of the game.

This game may be played more than once for additional practice. IT IS MOST IMPORTANT TO ENCOURAGE THE CORRECT PRODUCTION OF THE SPECIAL SPEECH SOUND WHILE PLAYING THE GAME. If the child does not say a word correctly containing his speech sound, ask him to repeat it correctly.

Assignment Completed

Parent Signature

HOW THE "S" SOUND IS MADE: Widen the tongue and place it behind the upper teeth near the gum. Close the teeth lightly and blow down the center of the tongue with a slight hiss.

DIRECTIONS: Write the numbers from 1 through 9 on small pieces of paper, (one number on each individual piece of paper). Drop the pieces of paper in a hat or box, shake them around. Draw a number and perform the speech task on the corresponding number square from this assignment sheet. Continue until you have drawn all the numbers. Have mother or father listen to you while you play the game. Be sure to say your speech sound correctly.

1 Tell a story using as many words as possible with your speech sound.	2 Read one page aloud from a story book to Mother or Father. Be sure to say your speech sound correctly.	3 Say 6 words that have your speech sound in the middle position. Did you say them correctly?
4 Name 4 foods with your speech sound.	5 Say 6 words that have your speech sound at the end of words. Did you say them correctly?	6 Name 5 names of people that have your sound.
7 Go to the kitchen and name all the things you see that have your special sound.	8 Make a shopping list for Mother with as many foods containing your sound as you can think of that could be purchased at the grocery store. How many?	9 Turn on the T.V. and tune in a program in which someone is talking. In three minutes write down as many words as you can in which you heard your speech sound. How many?

To the parent: If your child does not say his/her speech sound correctly, ask him/her to repeat it correctly.

Assignment Completed

DIRECTIONS: Can you say each of your "S" blend words aloud (correctly) as you climb the ladder? If you can, make a star in the box at the top of the ladder. Now come down the ladder and say each word aloud in a sentence.

sky
scrub
sleep
small
snake
spoon
splash
spring
star



Assignment Completed

BEGINNING

DIRECTIONS: Find (4) pictures of things that begin with your "z" sound from old magazines, picture books, or newspapers. Cut them out and paste them on this paper. Write a sentence under each picture using the picture word in the sentence. Ask mother or father to listen as you say the name of each picture and read each sentence correctly.

Assignment Completed

Parent Signature

ENDING "

AND S

DIRECTIONS: Find (4) pictures of things that end with your "z" or buzzing "s" sound from old magazines, picture books, or newspapers. Cut them out and paste them on this paper. Write a sentence under each picture using the picture word in the sentence. Ask mother or father to listen as you say the name of each picture and read each sentence correctly.

Assignment Completed

Parent Signature

DIRECTIONS: Find (4) pictures of things that have your "Z" or buzzing "S" sound in the middle position from old magazines, picture books, or newspapers. Cut them out and paste them on this paper. Write a sentence under each picture using the picture word in the sentence. Ask mother or father to listen as you say the name of each picture and read each sentence correctly.

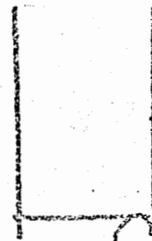
Assignment Completed

Parent Signature

DIRECTIONS: Say your "Z" and buzzing "S" words correctly in each circle.
 Have mother or father listen to you as you play the game.
 If you say all the words correctly, give yourself a star in
 the box at the top of the page.

Completed

Signature



Stop
He

zipper

busy

Thursday

bees

those

does

goes

cheese

eyes

easy

his

rose

was

eggs

as

is

buzzing

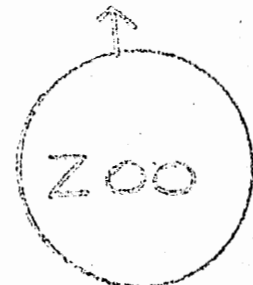
zebra

buzz

music

lazy

scissors

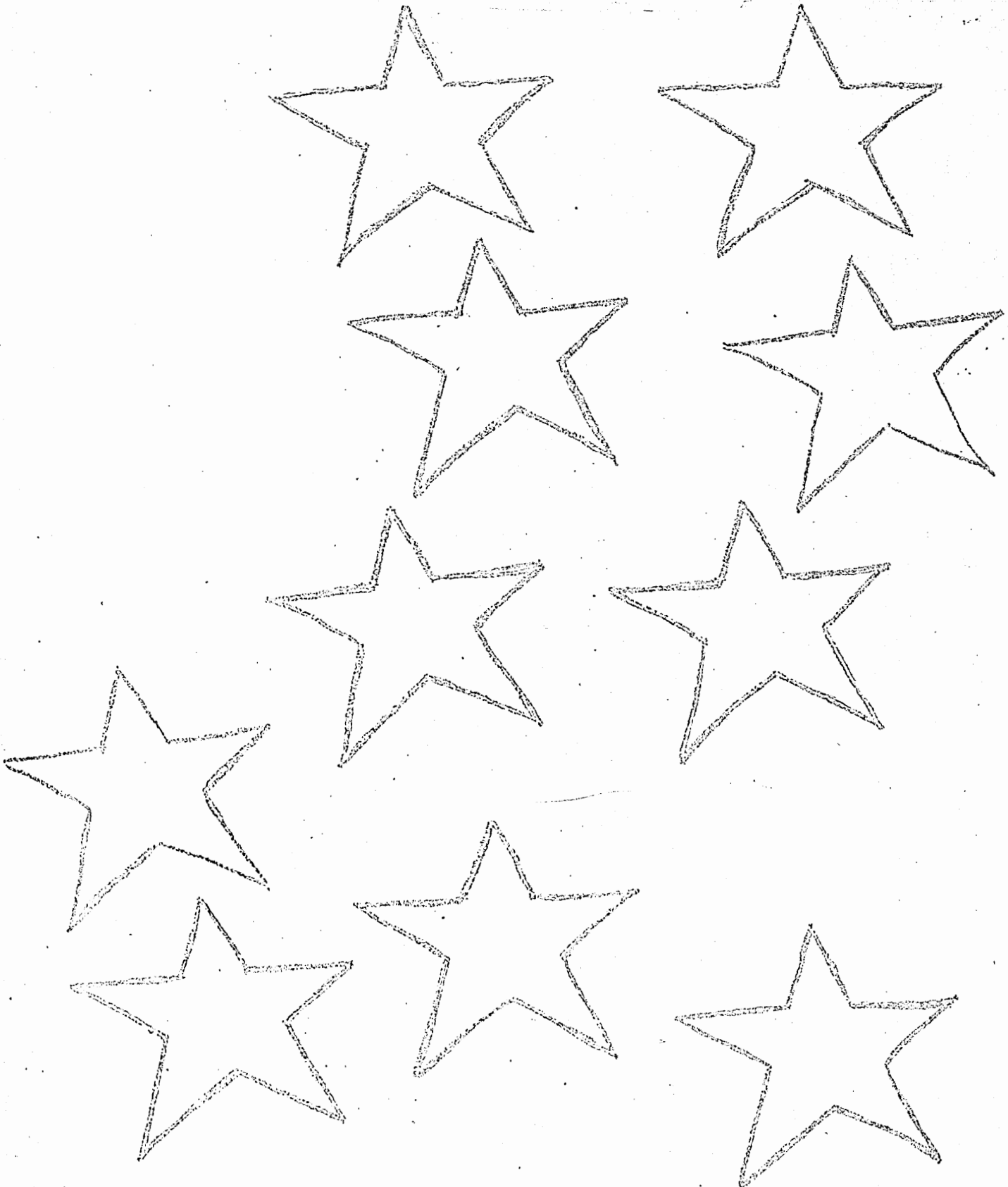


Start

- : From one of your favorite story books, choose a word with your buzzing "S" and "Z" sound to write on each star. Say each word correctly in a sentence to mother or father. Color the stars containing the words you said correctly.

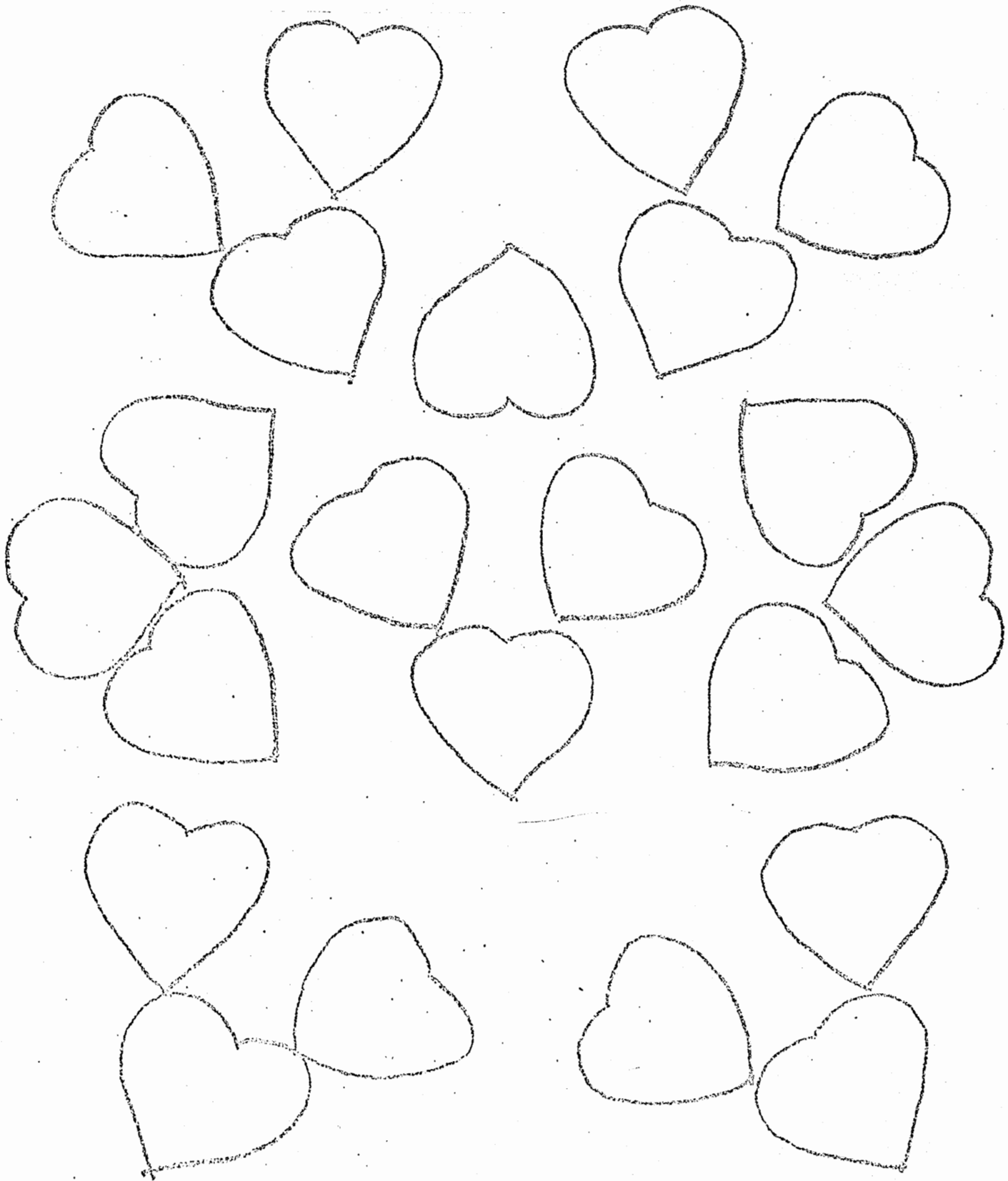
Assignment Completed

Parent Signature



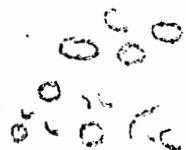
DIRECTIONS: From one of your favorite story books, choose a word with your buzzing "S" and "Z" sound to write on each valentine. Say each word correctly in a sentence to mother or father. Color the valentines containing the words you said correctly.

Assignment Completed



DIRECTIONS: Help each mouse climb the steps to find the cheese. As you climb the steps, perform each speech task aloud. Have mother or father listen to you as you play the game. Be sure to use your "S" and "Z" sounds correctly as you perform each task. If you say your speech sounds correctly, color each piece of cheese.

Assignment Completed



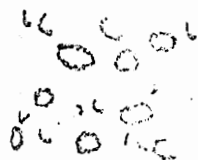
Say names of
people that
have your speech
sound.

Say 6 words that
start with your
sound.

something
a favorite
Use your
sound.

Read a page aloud
from a story book.
Be sure to say
your sound

that have your
speech sound.



SE Name 3 foods
that have your
sound.

Name 3 large cities
that have your
sound.

Say 5 things
you see at school
with your sound.

Name 4 song titles
with your sound.

MOUSE

MOUSE

MY SPEECH POEMS

DIRECTIONS: Draw a line under the words that have your "S" and "Z" sounds. Ask mother or father to listen as you read the poems. Learn to say the poems from memory. When you come to a word that has your speech sound, be sure to say it correctly.

SOUP AND SOAP

Soup and soap
Sound much the same,
And yet I hope
You don't eat soap!

MEASLES

Bozo had the measles,
Susan had them too,
They didn't want the measles,
Boohoo, boohoo, boohoo!

(Poems taken from The Big Book of Sounds by Ann M. Flowers.

Assignment Completed

Parent Signature

MY SPEECH STORY ASSIGNMENT

DIRECTIONS: Write a story using as many words as possible containing your "S" and "Z" sounds. Underline all the words in the story with your sounds. Read the story aloud to mother or father. Be sure to say your speech sounds correctly. Bring your story to Speech Class.

I READ MY SPEECH STORY SAYING ALL THE WORDS CONTAINING MY SPEECH
SOUNDS CORRECTLY. YES NO

(Circle one)

Assignment Completed

Parent Signature

DIRECTIONS: Draw and color six pictures of things that have your special "S" and "Z" sounds. Write a story and use the words from your pictures. Read the story aloud to mother or father. Did you say the words containing your speech sounds correctly? Yes No (Circle one)

Assignment Completed

Parent Signature

MY SOUND IS: "S" and "Z"

To Mother and Father:

Please listen to my oral reading and tell me if I say my special speech sound(or sounds)correctly or incorrectly.

These are the steps I will follow in reading aloud:

1. I will find a page in a reading book that has a lot of words with my speech sound.
2. I will read the page silently and locate the words containing my speech sound.
These words may be written on a sheet of paper or underlined in the book (with the permission of a parent).
3. I will then say the words aloud from my reading page that contain my speech sound
4. Then I will read the page for you aloud.
If I do not say my speech sound correctly, please ask me to repeat the word correctly

One Reading Page Completed

Parent Signature

1. Say the pledge of allegiance to the flag aloud to mother or father.

Did you say your "S" and "Z" sounds correctly?

YES

NO

(Circle one)

2. Talk for two minutes about a television program that you have seen recently. Ask mother or father to listen to you.

Did you say your "S" and "Z" sounds correctly?

YES

NO

(Circle one)

Assignment Completed

Parent Signature

ACTIONS: Pretend you are driving your car on the road. Make your "Z" sound as you travel. Each time you come to a stop sign on the road be sure to stop, look both directions before you start again. As you make each stop, tell about the things you might see or buy at each place along the road using your "S" and "Z" sounds. Ask mother or father to listen to you during your speech trip. Be sure to say your sound correctly.

Assignment Completed

I said my speech sound correctly.

YES

NO

Start Here

APPLY
SWIMMING
OL

RANCH

CANDY
STORE

RE

STORE

LAND

SPORTS
GOODS

Finis

JOE'S
HAM

to

N

MY SPEECH STORY GAME

DIRECTIONS: Tell a favorite story to mother or father. Be sure to say your "S" and "Z" sounds correctly. Ask mother or father to make a mark on this piece of paper every time you say your sound wrong in a word. See if you can tell the story using your speech sounds correctly.

Story Suggestions

"Cinderella"

"The Three Little Pigs"

"The Little Red Hen"

"Three Billy Goats Gruff"

"Chicken Little"

"Little Black Sambo"

"Goldilocks and the Three Bears"

"Jack and the Beanstalk"

"Snow White and the Seven Dwarfs"

I TOLD MY STORY USING MY SPEECH SOUND CORRECTLY.

YES

NO

Assignment Completed

Parent Signature

MY SPEECH STORY GAME

DIRECTIONS: Tell a favorite story to mother or father. Be sure to say your "S" and "Z" sounds correctly. Ask mother or father to make a mark on this piece of paper every time you say your sound wrong in a word. See if you can tell the story using your speech sounds correctly.

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"Goldilocks and the Three Bears"

"Jack and the Beanstalk"

"Snow White and the Seven Dwarfs"

I TOLD MY STORY USING MY SPEECH SOUND CORRECTLY.

YES

NO

Assignment Completed

Parent Signature

APPENDIX III

Computation of the Data

COMPUTATION OF THE DATA

In order to determine the significance of the amount of speech improvement made by the children in both the control and experimental groups of this study, a t-test was used to determine if the difference between the mean of the original articulation test scores and the mean of the final articulation test scores was significant for either the experimental or the control group. These data are presented in Tables IV and V of this paper. The formula used for this test was the following:

$$t = \frac{\bar{x} - \bar{y}}{\text{Diff } (\bar{x} - \bar{y})}$$

Legend: t = Critical Ratio

$\bar{x}$ = Mean of the Final Scores

$\bar{y}$ = Mean of the Original Scores

Diff $(\bar{x} - \bar{y})$ = Square Root of the Sum of the Squared Errors of the two Means*

*(This is the standard error of the difference between the mean of the final scores.)

A t-test was then applied to the difference between the mean gains of the control group and the experimental group. The results are presented in Table VI of this paper. The formula used for this test was as follows:

$$t = \frac{(\bar{x-y})_a - (\bar{x-y})_b}{\text{Diff } (\bar{x-y})_a - (\bar{x-y})_b}$$

Legend: t = Critical Ratio

$\overline{(x-y)}_a$ = Mean Difference Between the Original
and the Final Scores of the Experimental
Group

$\overline{(x-y)}_b$ = Mean Difference Between the Original and
the Final Scores of the Control Group

Diff $\left(\frac{\overline{(x-y)}_a}{\overline{(x-y)}_a} - \frac{\overline{(x-y)}_b}{\overline{(x-y)}_b} \right)$ = Standard Error of the
Difference Between
the Mean Difference
of the Experimental
Group and the Mean
Difference of the
Control Group

The above formulae were derived from A Simplified
Guide to Statistics for Psychology and Education, by
G. Milton Smith (3rd ed.; New York: Holt, Rinehart and
Winston, Inc., 1962), p. 74.

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