THE EFFECTS OF MELODIC DICTATION AND SIGHT SINGING ON MUSIC READING ACHIEVEMENT

Thesis for the Degree of Ph. D.
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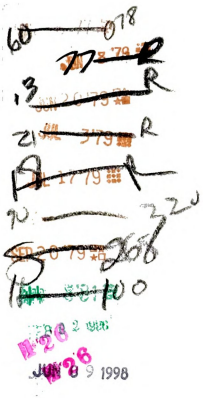

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ABSTRACT

THE EFFECTS OF MELODIC DICTATION AND SIGHT SINGING ON MUSIC READING ACHIEVEMENT

By

Harold Thomas Karl

The purpose of the study was to determine the effects that melodic dictation and sight singing have on music reading achievement. Using melodic dictation and sight singing as the experimental factors, the sequence of instruction was also investigated over a ten-week period with the following design:

	Five Weeks	O_1	Five Weeks	O_2
1.	Sight Singing Familiar Songs		Melodic Dictation Familiar Songs	
2.	Sight Singing Familiar Songs		Sight Singing Familiar Songs	
3.	Melodic Dictation Familiar Songs		Sight Singing Familiar Songs	
4.	Melodic Dictation Familiar Songs		Melodic Dictation Familiar Songs	

A total of 189 non-music major students, who were enrolled in six classes of the course entitled Understanding Music at State University College, Geneseo, New York were

used for the study in the Fall and Spring semesters of the 1969-1970 school year. Prior to the study, a three-week instructional program pertinent to the groups' training procedures was given, i.e., tempo, key and time signatures, pitch and rhythm notation, and phrasing.

All groups used the same instructional materials, which were tonally oriented sight singing and/or melodic dictation exercises and familiar songs of folk and popular styles. Exercises and songs were practiced in unharmonized settings with the whole-method approach.

In order to determine the effects that melodic dictation and sight singing have on music reading achievement, the following null hypotheses were tested at the five per cent level of confidence with results obtained on the criterion instrument (errors on two sight singing tests - O_1 and O_2), errors on three melodic dictation tests, and a music questionnaire concerning musical background:

Null Hypothesis I

> There is no difference in music reading achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures if musical background is nearly equal.

The analysis of covariance technique was used to compare the groups by using the sight singing tests as the criteria and a rating scale of musical background as the covariate. The analysis did not indicate a significant

difference in music reading achievement. Musical background was found to be nearly equal in all groups, and there was a high negative correlation well beyond the one per cent level of confidence (high musical background - low errors, low musical background - high errors).

Null Hypothesis II

> There is no significant relationship between scores in melodic dictation and sight singing.

The correlation matrix of training procedure groups involved with tests in both melodic dictation and sight singing revealed that correlations were high at the five per cent level of confidence.

Null Hypothesis III

> There is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing.

A t test was used to compare results on the sight singing criteria of contrasting training procedure groups involved with both melodic dictation and sight singing. The analysis indicated that there was no significant difference in music reading achievement.

Null Hypothesis IV

> There is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers.

The analysis of variance technique was used to compare results on the sight singing criteria of low and high achievers in training procedure groups involved with both melodic dictation and sight singing. The analysis indicated that there was no significant difference in music reading achievement with either high or low achievers or the interaction of high and low achievers.

On the basis of this study, it may be concluded that:

1. musical background is an important factor in determining music reading achievement.
2. there is a significant relationship between scores in melodic dictation and sight singing.
3. the sequence of instruction has no significant influence on music reading achievement.

THE EFFECTS OF MELODIC DICTATION AND SIGHT SINGING ON MUSIC READING ACHIEVEMENT

By

Harold Thomas Karl

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CHAPTER I

INTRODUCTION

Music Reading

In introductory or general music courses, there is a tendency for the music teaching profession of today to lessen or eliminate learning procedures that include knowledge of notation and its practical application. This is evident in many of the introductory books on music that emphasize talking about or listening to music, rather than participating or producing in music.

Skill in vocal music reading was the primary goal in the school music program during the years between the Civil War and World War I. As philosophical and psychological concepts of music education changed, music reading became subordinate to other phases of the music program. If the trend away from music reading continues, the music program could become unbalanced in other directions.

Reimer[1] believes in a balanced approach to the understanding of music, i.e., the development of concepts and factual knowledge, analysis, and performance.

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[1]Bennett Reimer, "The Development of Aesthetic Sensitivity," Music Education Journal, LI (January, 1965), 33-36.

> There are three broad categories of methods which improve aesthetic perceptivity. The first is the development of concepts and factual knowledge. These concepts and knowledge deal with such matters as what art is supposed to do and what it is not supposed to do; what kinds of things should happen to one in the experience of art; how artists create; what the various arts are made of and how their materials work; the historical and social context of particular art-works and of stylistic eras, and so on.
>
> The second category of methods is analysis. This includes all the activities which deal directly with the aesthetic content of particular works or of broad styles. Such activities range anywhere from minute and careful examinations of little bits and pieces of a single work, to overall comparisons of entire style eras. Each art medium has its particular methods of analysis. All such methods have for their purpose the direct and immediate improvement of the perception of the works being studied through examinations of what the works actually contain and how they are put together.
>
> The third category of methods is performance. This includes all activities that involve the actual making of art, ranging from pencil drawing to playing in a symphony orchestra, from classroom singing of songs to the staging of a full-blown dramatic production.[1]

Ernst[2] conveys the same general opinion by listing the skills, understandings, and attitudes that he believes the musically-educated person should possess:

Skills

1. Intelligent listening.
2. Singing.
3. Ability to express himself on a musical instrument.

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[1] Ibid., p. 35.

[2] Karl D. Ernst and Charles L. Gary, Music in General Education (Washington, D. C.: Music Education National Conference, 1965), pp. 4-8.

4. Interpret notation.

Understandings

1. Design in music.
2. Historical development in music.
3. Place of music in contemporary society.
4. Relationship between music and other disciplines.

Attitudes

1. Desire to continue musical experiences.
2. A sense of the value of music as a means of self-expression.
3. Discriminating taste.[1]

This study will be conducted as a part of, and not exclusive of, the introductory music course entitled Understanding Music, and it will represent a small portion of each class period. The instruction in sight singing and melodic dictation will complement the other objectives of the course, which parallel the music education principles of Reimer and Ernst.

Davis[2] defines music reading as follows:

> Music reading is understood to be a skill involving the ability to reproduce accurately from the score the two main properties of musical sound, pitch and duration, with a reasonable amount of expressiveness and interpretation.[3]

Dykema and Cundiff[4] define music reading as

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[1]Ibid., p. 6.

[2]Jesse Foss Davis, "The Effectiveness of Music Dictation as an Aid to Music Reading in Grades Seven and Eight" (unpublished Master's Thesis, Boston University, 1952).

[3]Ibid., pp. 1-2.

[4]Peter Dykema and Hannah M. Cundiff, New School Music Handbook (Boston: C. C. Birchard and Co., 1934).

"interpreting the printed page ('reading music') with some ease and musical feeling."[1] Mursell defines music reading as "the performance of music directly and independently from the score."[2]

Music reading covers a wide range of activities and includes the following:

1. Pitch reading.
2. Rhythm reading.
3. Pitch and rhythm reading combined (exercises and melodies).
4. Reading of melodies in harmonized and unharmonized settings.
5. Silent reading, which includes recognition of familiar melodies.
6. Score reading while listening to music.
7. Pitch dictation.
8. Rhythm dictation.
9. Pitch and rhythm dictation combined (melodic dictation).
10. Knowledge of notational and interpretive symbols, i.e., meter and key signatures, pitch and rhythm, tempo, expressive and dynamic markings.
11. Technical proficiency.
12. Interpretive aspects relating to musicianship, such as an understanding of and ability to respond to phrasing and changing dynamic levels.

Factors that could influence music reading achievement include:

1. Instructional training procedure (programmed learning, teaching machine, teacher-classroom, tutoring).
2. Specific techniques such as tachistoscopic drill, voice and/or instrument, syllables and/or letters.
3. Whole- or part-method approach.
4. Quality of instruction.
5. Intelligence.
6. Musical background.
7. Socio-economic background.

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[1] Ibid., p. 5.

[2] James L. Mursell, "Music Reading," National Society for the Study of Education, 35th Year-Book, Part I, (1936), 99.

This study will involve two factors of the music reading process: sight singing and melodic dictation.

Sight Singing

The ability to sight read music can be an asset to the student, teacher, performing ensemble (choral or instrumental), and to the professional performer. The lack of this ability is not a recent phenomena; as a matter of fact, the problem seems to have been and continues to be an ever present part of the musical scene.

> Marvelous singers, and singers' pupils, though they sing every day for a hundred years, will never sing one antiphon, not even a short one, of themselves, without a master, losing time enough in singing to have learned thoroughly both sacred and secular letters.[1]

> I want you to think with me about the very first thing necessary in our practical work in choir training . . . that is learning to read at sight. I put this first, for I hold it to be entirely true that unless a singer is a musician, he may be simply a nuisance as a soloist, or even worse than useless in any kind of concerted music.[2]

The student who is an effective sight singer is not likely to lose interest in music, primarily because this ability represents a measure of achievement. With this

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[1]Oliver Strunk, Source Readings in Music History (New York: W. W. Norton and Co., 1965), p. 117, citing Guido de Arrezo, Scriptores ecclesiaticiore musicam, vol. II, p. 34, ed. by Martin Gebert.

[2]S. Vale, Training of Boys' Voices (Faith Press, Ltd., London, 1932), p. 31.

accompanying sense of accomplishment, the student is less likely to drop out of music.

The teacher who has instilled effective sight singing skills in his students is in the enviable position of devoting more lesson time to other aspects that are necessary in developing musicianship. Otherwise, the teacher has to spend a disportionate amount of time patching mistakes in pitch and rhythm for his unaware students. Since pitch and rhythm represent only the skeleton of music, the real meaning of music cannot be learned unless the student has a good command of these pitch and rhythm fundamentals.

Group Activities

Preparing for concerts is often a necessary part of a teacher's duties. Too often, instructors resort to rote methods as a matter of expediency in order to get the job done by a scheduled deadline. Unfortunately, this may be the least effective way, for the tedious process must be repeated for each concert that follows. The teacher constantly finds himself in a bind, thus repeating the cycle year after year. If students were well-grounded in the knowledge and ability to respond to notation, they could acquire a capacity for reading. As a result, new compositions could be learned faster than the rote method.

It is appalling for the college choral director to find that there are students with high school choral experience who cannot read music! That is the first requisite to

effective sight singing. Hopefully, there might be some singers in each of the vocal ranges (soprano, alto, tenor, bass) who can carry the musical lines; however, those who cannot will weaken the group. The ratio of good and poor readers is an important factor in determining the length of time that it will take to prepare for a concert as well as the dimension of the repertoire. If the director does not immediately take procedures to correct the situation, he will be in exactly the same rote teaching dilemma as some high school choral directors.

It is not a mystery why many vocal groups do not present good concerts. They take so long to learn the parts that not enough time is left for polishing. If ten minutes were devoted to drilling on nomenclature so that every student would know the name of every note on the staff and every rhythmic value in various time signatures, that would be a first and important step. Along with the notational knowledge, drills in sight singing and/or dictation should be conducted in order to put the knowledge to practical use. This thesis will attempt to indicate the method, combination of methods, and instructional sequence that would be most appropriate.

Zimmerman[1] conducted a study to determine the relationships of musical environment to choral sight reading

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[1]Robert C. Zimmerman, "Relationship of Musical Environment to Choral Sight-Reading Ability" (unpublished Ph.D. dissertation, University of Oregon, 1962).

ability. Four hundred and forty-one choir singers, representing ten different choral organizations in Oregon, were involved in the study.[1]

The findings revealed that there was a wide range of reading abilities that were associated with, and were possibly a result of the differences in the subjects' environments. Influences with a high positive relationship included formal music study, instrumental music training and experience, early interest in and continued enjoyment of music, and the use of a systematic method or methods in sight reading. Factors that had less influence were private voice instruction, musical entertainment in the form of radio or phonograph listening or concert attendance. There was no apparent relationship between choir singing and sight reading skill.

Zimmerman concluded that choral sight reading skill is acquired primarily through a systematic association with notation that may be strengthened through an interest in and continued enjoyment of music. Musical experiences that require no specific discipline with regard to notation do not tend to contribute to this ability.

Teaching Profession

A survey was taken in 1952 of music teachers to ascertain which courses taken in college had proven to be the most valuable in their teaching profession. In

---

[1]Ibid., p. 7.

addition, the teachers were asked to state the course or courses which need to receive greater emphasis.[1] Eight recommendations were subsequently presented to the State Central Coordinating Committee on Credential Revision in 1961, two of which relate to better reading:

> There should be greatly increased emphasis in basic piano skills, especially sight reading.
>
> Vocal sight reading should receive high priority in all appropriate courses.[2]

Professional Performance Field

Professional organizations (choir, orchestra, or band) place a premium on sight reading ability along with quality of performance. These organizations cannot afford the extra rehearsals that would be required for poor readers. As a result, good readers are hired even though they might not be better solo performers than the poor readers.

Taylor[3] reports that the results of a five-year testing program at the College of Music of Cincinnati from

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[1]Frank Woost, "A Survey of Opinions Concerning the Adequacy of Preparation for Music Teaching by Graduates of the Schools and Colleges of California" (unpublished Master's Thesis, Los Angeles State College, 1961).

[2]Recommendations submitted to the State Central Coordinating Committee on Credential Revision by California Music Executives, November 8, 1961, p. 5.

[3]Elizabeth M. Taylor, "A Study in the Prognosis of Musical Talent," Journal of Experimental Education, X (September, 1941), 1-23.

1930 to 1935 indicate the relationship of sight singing and dictation to professional success. The thirteen per cent of students who became full-time professional performers rated higher in sight singing and dictation than in other areas in predicting professional success.

Table XI[1]

Coefficients of Contingency Calculated for Ratings on Professional Success and College Course Marks, Intelligence Test Scores, and Professors' Estimates

Courses	Coefficient
Dictation	.538
Sight Singing	.582
Harmony	.341
History of Music	.349
Intelligence	.501
Professors' Estimate of Talent	.501
Professors' Estimate of Application	.541
Professors' Estimate of Achievement	.518

Melodic Dictation

Written and oral dictation was considered a primary pedagogical technique in the development of musicianship in the early years of the nineteenth century. Will states that:

> The first texts containing musical dictation did not appear until the early part of the nineteenth century. It was in an effort to improve and hasten the beneficial results of solfeggio and sight

[1] Ibid., p. 13.

reading that dictation was first used.[1]

Lavignac, who developed the first complete course in musical dictation in 1881, had this to say:

> An excellent complement to solfeggio is musical dictation, which bears the same relation to solfeggio that the theme does to reading. In this exercise, it is no longer the pupil who sings, but the master; after having made them listen in extenso to a phrase of eight or sixteen measures, he cuts it into short fragments, each of which he repeats several times, with pauses, so that the pupil may have the necessary time to write what he has heard and understood.[2]

Others conceive of dictation as a primary discipline in broader terms:

> The ear is the channel through which all musical impressions reach the mind, and also the one through which the mind censors and controls the apparatus which produces our own musical expression. It is, therefore, obvious that the correct training and use of the ear must be the teacher's first and constant care.
>
> When we speak of the ear, we do not mean the organ of hearing itself--whose physical perfection must be taken for granted--but the mental ear, that is, that part of the brain which receives sounds, groups their emotional character to the feelings and, in short brings all musical impressions to our consciousness.
>
> The processes of the ear are therefore manifold. In the apprehension of musical impressions, the physical ear receives and transmits them to the brain. If this is untrained, the impression will be superficial and evanescent . . . . If the mind

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[1]Roy Will, "The History and Development of Musical Dictation" (unpublished Master's Thesis, Eastman School of Music, University of Rochester, 1939), p. 2.

[2]Albert Lavignac, Musical Education, trans. Esther Singleton (New York: D. Appleton and Co., 1902), pp. 26f.

> is trained, however . . . it notes the nature and quality of the sounds, their pitch relationships to each other, their rhythmic grouping, accentuation, and tempo; in short, it receives the musical message, understands it, and records it . . . .
>
> Is it not remarkable, then, that the development of this most important faculty--the brain ear--has usually been left to haphazard? It should and must receive the first attention, and indeed, it cannot receive too much or too constant care.[1]
>
> The mind is the center of perception and as such responds to aural stimuli. The response of the mind to aural (musical) stimuli is the essence of ear training, and as this deals with mental processes, it becomes a psychological phenomena [sic]. Therefore, we can say that music is a psychological subject. By applying the same basic psychological principles, we can substantiate ear training (mental-aural) as the core of education in music.[2]
>
> Continuing with the premise that ear training is a psychological function, it follows that the mental perception to aural stimuli and the meaningfulness of the response is dependent upon meaningful translations. As has been said, 'the inner ear' must be trained to hear harmonically, melody-wise, and aesthetically. This is the key to symbolic representation and is fundamental in the reading or making of scores. The more the ear comprehends, the greater the musical responses. Mental perception, that is, our accumulation of musical knowledge, is the basis for our musical activity. It is the root of our means of communication. No matter whether we are performers, composers, or teachers, ear training is the fundamental element of our ability to function.[3]
>
> Ear training, in the narrower sense, is very well used in higher schools with excellent success. Good

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[1]Frank Damrosch, Some Essentials in the Teaching of Music (New York: G. Schirmer, Inc., 1916), pp. 21-22.

[2]Herbert Spencer, "Ear Training in Music Education," Music Educators Journal, XXXIII (February-March, 1947), 44.

[3]Ibid., p. 46.

> methods have been developed but have the same curious effect as the progress of teaching techniques in other musical subjects: they have become too abstract and have lost somewhat the natural connections with their purpose. Of course, a trained ear is valuable, but not so much if the ear is only the gate to the auditory sense, instead of being the gate to the musical mind. Like harmony, counterpoint, and other theoretical studies, ear training is not an end in itself, but only a step towards musicianship.[1]

Purpose of the Study

The purpose of this study was to determine the effects of melodic dictation and sight singing on music reading achievement. The sequence of instruction was also investigated by using a variety of training procedures.

Hypotheses

Hypothesis I

> Music reading achievement differs whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures if given nearly equal musical background.

Hypothesis II

> There is a significant relationship between scores in melodic dictation and sight singing.

Hypothesis III

> Music reading achievement is dependent on the sequence in which melodic dictation or sight singing is given in the training procedure.

---

[1]Arnold Schoenberg, "Ear Training through Composing," Music Teachers National Association Proceedings, XXXIV (1939), 58.

Hypothesis IV

Music reading achievement is dependent on the sequence in which melodic dictation or sight singing is given in the training procedure with either high or low achievers or the interaction of high and low achievers.

Experimental Procedures

Six groups, involved with four training procedures, participated in the study during the fall and spring semesters of the 1969-70 school year at State University College at Geneseo, New York. The experiment encompassed a ten-week period, three classes a week. The design of the experiment can be found on page 88.

A three-week instructional program preceded the ten-week experiment. All essential instruction pertinent to the groups' training procedures in the experiment was covered, i.e., the knowledge of and response to music notation. Emphasis was placed on tempo, key and time signatures, pitch and rhythm notation, and phrasing.

Devices: Four singing books were used, i.e., two with sight singing exercises, the other two with familiar songs. Melodic dictation was taken from the sight singing books.

Testing Procedure

Sight Singing - The tests consisted of musical examples that were identical for all groups. All tests were recorded on tape for evaluation purposes.

Melodic Dictation - Identical exercises were recorded on

tape with the voice and given to Groups I, II, IV, and V. In addition, Group V was given three additional dictation tests (D_4, D_5, D_6).

Limitations of the Study

1) Non-music majors on the college level were used for the study.
2) The study was conducted in the fall and spring semesters, 1969-1970, in the course entitled Understanding Music (Music 100), at the State University College, Geneseo, New York.
3) Only melodies and exercises with tertian harmonic background were used; however, they were presented in unharmonized settings.
4) All notation in sight singing, melodic dictation, and familiar songs was confined solely to the treble clef.

Complete details of the experimental procedures are included in Chapter III.

Definition of Terms

Music Reading - The perception, cognition, and decision-making process which makes possible the accurate performance of musical notation in a meaningful way.

Melodic Dictation - The transmission of the heard pitch and rhythmic elements that constitute a melody or exercise to a visual representation on paper by means of music notation.

Sight Singing - The singing of melodies or exercises that have not been previously practiced.

Familiar Songs - The singing of songs that are well-known and could have involved prior practice.

Need for the Study

It could be said of our country as late as 1935 that:

> There is not a single study available on the basis of sight singing or ear training, although hundreds of thousands of school children and thousands of music teachers spend hundreds of thousands of hours . . . in these activities in the name of music.[1]

Betts expresses the same sentiment when he wrote:

> Difficulties in vernacular reading have been carefully studied and classified by numerous investigations. It is appalling that no comparable research has ever been done in the field of music reading.[2]

As late as 1956, Lidral reported on investigations in dictation:

> Here is a paradoxical situation. On the one hand, we find an overwhelming belief, in this country at least, in the great values to be derived from the inclusion and emphasis on musical dictation in courses designed to educate the musical mind. On the other hand, we find evidences of a lack of the application of this belief in the neglect of training in dictation and also in the lack of interest in developing better pedagogical methods

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[1]M. Schoen, "School Music and Scientific Research," Music Teachers National Association Proceedings, XXX (1935), 72.

[2]E. A. Betts, Prevention and Correction of Reading Difficulties (Evanston, Ill.: Row-Peterson & Co., 1937), p. 359.

> in dictation, as attested to by the scarcity of literature on the subject. One of the author's major problems has been the location of an adequate and significant bibliography on the subject.[1]

These statements are no longer true; however, it is remarkable that until recently so few investigations have been conducted in sight singing and dictation concerning their value and/or methods and procedures of teaching these subjects. Numerous books and articles have been written extolling their virtues either as separate subjects or in conjunction with each other. The pet theories as to how to teach them vary widely and are almost as numerous as the authors. One has only to read the opinions of two of these authors to realize the contrast of ideas:

> If you are impatient, don't read this book. If you are a musician whose attitude to solfa and other 'childish' aids is one of disdain, don't read this book. If you are a musician with a genuine interest in teaching children, you will, I hope, find this book interesting and helpful. If you are a general class teacher, willing to 'teach' music to your children--note that I said 'teach' music, and not merely a few songs by rote--then please read this book and try out its suggestions in the classroom. As a teacher, you are not likely to be impatient; you will not expect children to be able to do what they have not had the opportunity of learning to do, and you will not hurry through the steps that provide this opportunity, nor will you omit any of them. You will be

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[1]Frank Lidral, "A Study in the Pedagogy of Melodic Dictation" (unpublished Ph.D. dissertation, Eastman School of Music, University of Rochester, 1956), p. 10.

prepared to learn with, and even from, your pupils.[1]

A musician brought up on the method of Solfege, as practiced in countries under the influence of French or Italian musical culture, will probably deny that there could be any better method. And if one knows the comparatively high standard in sight reading of melodic and rhythmic patterns (even higher in the rapid pronunciation of the solmization syllables!) one is tempted to agree. But the disadvantages of this method show up later in the musician's course of study: it is extremely difficult to introduce students so trained to a higher conception of harmony and melody, and to bring them to a certain independence in their own creative work. They either cannot take the step out of their narrow concept of tonality (which by the uniform nomenclature for a tone and all its derivations is distorted almost to the point where reason turns into nonsense!), or they plunge more easily than others into what is assumed to be a new freedom: tonal disorder and incoherence.[2]

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[1]Arnold Bentley, Aural Foundations of Music Reading (London: Novello and Company, Ltd., 1966), p. 7.

[2]Paul Hindemith, Elementary Training for Musicians (New York: Associated Music Publishers, Inc., 1949), p. viii.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

Sight Singing and Melodic Dictation

Carlsen[1] conducted an experiment with the freshman ear training class at Northwestern University School of Music. Although he primarily investigated the value of programmed learning in melodic dictation, the sixth objective of the study is pertinent: To determine the effect of various training methods on achievement in sight singing.

> The content and orientation of ear training courses in various schools of higher learning indicate a lack of agreement among theorists as to which approach, sight singing or melodic dictation, should receive the greater emphasis. Because the design of this experiment permitted it, it was decided to examine as a side issue, the effects of various training methods upon sight singing achievement.[2]

Subjects in the study were divided into five training procedure groups for the five-week, two sessions a week experiment as follows:

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[1]James C. Carlsen, "An Investigation of Programmed Learning in Melodic Dictation by Means of a Teaching Machine Using a Branching Technique of Programming" (unpublished Ph.D. dissertation, Northwestern University, 1962).

[2]Ibid., p. 74.

Group a) Programmed learning group in melodic dictation following linear programming.

Group b) Programmed learning group in melodic dictation following branching programming.

Group c) Teacher-classroom group in melodic dictation.

Group d) Teacher-classroom group in sight singing with supplementary training on programmed learning in melodic dictation.

Group e) Teacher-classroom group in sight singing without supplementary training on programmed learning in melodic dictation.[1]

Out of a total of eighty-six students who completed the experiment, five students were randomly selected from each group (eventually four from group a) to take the sight singing pre- and post-test.

There was no significant difference in criterion scores on sight singing between the five training procedure groups.

> The statistical results indicated that Null Hypothesis 6 should be accepted (there is no significant difference between sight singing scores of subjects as a function of training method), but two things suggest that such acceptance constituted a great danger of making a type II error (mistake of accepting a null hypothesis that was false). First it must be pointed out that the sample for each training method was necessarily small, thus the chances that each was a representative sample was minimized. Second, it should be noted that there was incidence of regression on the part of at least one subject in each training method group (see Table 20). This would appear to indicate insufficient time to learn the objectives tested

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[1] Ibid., pp. 26-29.

by the criterion instrument.[1]

TABLE 20[2]

CONTROL (X) AND CRITERION (Y) MEASURES IN SIGHT SINGING OF SUBJECTS FROM FIVE DIFFERENT TRAINING PROCEDURES

A		B		C		D		E	
X	Y	X	Y	X	Y	X	Y	X	Y
7	1	15	11	2	1	21	26*	24	29*
2	3*	20	17	2	1	12	1	19	1
12	1	2	1	11	13*	23	28*	16	1
23	23	2	3*	22	22	4	12*	8	12*
		32	23	45	18	35	19	10	1

*An asterisk indicates regression.

Another factor that could have influenced the results is that identical tests (pre and post) were given in melodic dictation and sight singing.

> The identical instrument is administered twice to the same individuals in the test-retest method, and the scores are then correlated. The possibility always exists, of course, that results on the second test may have been affected by practice, recall, or other factors.[3]

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[1] Ibid., p. 75.

[2] Ibid., p. 60.

[3] Roger P. Phelps, A Guide to Research in Music Education (Dubuque: Wm. C. Brown Company Publishers, 1969), p. 179.

This factor is supported by Campbell and Stanley:[1]

> A third confounded rival explanation is the effect of testing, the effect of the pre-test itself. On achievement and intelligence tests, students taking the test for a second time, or taking an alternate form of the test, etc., usually do better than those taking the test for the first time (e.g., Anastasia, 1958, pp. 190-191; Cane and Heim 1950). These effects, as much as three to five IQ points on the average for naive test-takers, occur without any instruction as to scores or items missed on the first test.[2]

As an hypothesis for further study, Carlsen suggests that:

> Subjects who are taught melodic dictation by means of programmed learning materials on a teaching machine and who are given basic, but minimal, training in sight singing, will learn to sight sing more effectively than subjects whose training has been only in sight singing, but with a comparable total training time.[3]

Davis[4] investigated the effectiveness of music dictation as an aid to music reading in grades seven and eight of the Naugatuck, Connecticut, public schools. Although different objectives are involved in music reading than in sight singing alone, both deal with similar characteristics: pitch and rhythm, and the voice as the medium. In contrast

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[1]Donald T. Campbell and Julian C. Stanley, "Experimental and Quasi-Experiment Designs for Research on Teaching, Handbook of Research on Teaching, ed. Gage. N. L. Chicago: Rand McNally & Company, 1963).

[2]Ibid., p. 179.

[3]Carlsen, op. cit., p. 77.

[4]Jesse Foss Davis, "The Effectiveness of Music Dictation as an Aid to Music Reading in Grades Seven and Eight" (unpublished Master's Thesis, Boston University, 1952).

to sight singing, music reading does involve drilling on melodies and exercises that have been previously practiced.

Grades seven and eight were divided into four sections each, two sections participating in music dictation through the prescribed problems. The remaining two followed the music program to which they had been accustomed and which did not involve dictation. The experiment extended over a twenty-week period, two sessions a week. Dictation was given for five minutes in each session. No mention was made as to whether the experimental dictation groups were given as much music reading as the control groups. The experiment was carried out by classroom teachers. Appropriate drill materials were given to the seventh and eighth grade groups. Pre- and post-sight singing tests were given to all groups.

Ten test problems were provided for each of the experimental sections, these problems being similar in nature to those found in the regular drill material. These test problems were given bi-weekly, and the students were informed of their mistakes. The teacher then took remedial steps in order to strengthen the students' weak areas.

Results of the Experiment[1]

Percentage of Improvement in Scores from the Pre- to the Post-Sight Singing Test

Grade Seven

Experimental Group A	47
Control Group A	30
Experimental Group B	66
Control Group B	24

Percentage of Total Improvement in Grade Seven

Experimental Groups:	54
Control Groups:	27

Grade Eight

Experimental Group A	58
Control Group A	29
Experimental Group B	34
Control Group B	48

Percentage of Total Improvement in Grade Eight

Experimental Groups:	44
Control Groups:	37

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[1]Davis, op. cit., pp. 39-42.

All groups, control and experimental, showed improvement in reading. All of the control groups made an improvement of at least twenty-four per cent, one achieving as high as forty-eight per cent. The experimental groups made an improvement of at least thirty-four per cent, and one group reached sixty-six per cent. However, the improvement of the experimental groups could not be called significant.[1]

> It is significant that the grade seven experimental groups made an improvement of 54 per cent, or 10 per cent greater total improvement than the experimental groups of grade eight, as shown in the preceding charts. This indicates that the experiment in musical dictation was more successful in the lower of the two grades, and that it might be more successful in grades five and six.[2]

Davis' suggestion that dictation might be more successful in earlier grades does not lend support to the commonly held belief that dictation is a difficult and forbidding subject. In conversations with music teachers, Lidral[3] found that they usually believe in the value of dictation, but are reluctant to teach it because they feel it too difficult a subject for their students to grasp. The Davis study indicates that this may not be true. In addition, the classroom teachers reported that the

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[1]Davis, op. cit., pp. 39-42.

[2]Ibid., pp. 43-44.

[3]Lidral, op. cit., p. 9.

students showed a higher degree of achievement in other areas of study as a result of the dictation program. Specifically, they improved in their ability to follow directions, and their listening habits improved where classroom activities were concerned.

As an observation, the wide range of improvement shown by the groups could in part be due to the use of classroom teachers as instructors in the experiment, since their capabilities as music instructors could vary widely.

Mosher[1] constructed a battery of tests that were designed to be administered to groups in an effort to determine individual sight singing ability. The battery consists of seven parts, of which the first three parts measure factual knowledge about music, the fourth part measures tonal imagery (recognition of familiar melodies from a score), and the last three parts measure aural ability, i.e., pitch and rhythm dictation. These tests were used in conjunction with Mosher's sight singing criterion test, whose reliability was .931 by the test-retest method.

The tests were given to 723 school children from

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[1]R. M. Mosher, A Study of the Group Method of Measurement of Sight Singing (New York: Teachers' College Contribution to Education, No. 194, Bureau of Publications, Columbia University, 1925).

three elementary schools in grades five to eight. Partial regression and multiple correlation were applied to raw correlations between the sight singing criterion test and the group sub-tests. The analysis revealed the weights of the various sub-tests in their influence upon sight singing ability and a resultant multiple correlation of .68. The sub-tests are listed in order of importance:

1. Dictation of tonal patterns and figures.
2. Silent reading of melodies.
3. Dictation of melodies.
4. Recognition of tonal patterns and figures.
5. Scales and chords recognition.
6. Knowledge of measure and note values.
7. Knowledge of musical symbols.

Mosher had this to say concerning the results:

> . . . it is probably safe to say that in reading music, sight singing is dependent upon the power to think music. If this be true, ability to write from dictation the several note patterns is undoubtedly a measure of one's power to think in the tonal language in terms of relationships of pitch.[1]

Ritchie[2] designed an experimental test consisting of twenty-four four-note melodic fragments to test the effects of diatonic harmony on the aural perception of melodic fragments. Each of the fragments had one unharmonized and three harmonized settings with differing

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[1] Ibid., pp. 54-55.

[2] Thomas V. Ritchie, "A Study of the Effects of Diatonic Harmony Upon the Aural Perception of Selected Melodic Fragments" (unpublished Ph.D. dissertation, Indiana University, 1960).

harmony. The subjects were to write the second, third, and fourth notes of a sequence of tones in whole-note values. The material was played from a magnetic tape recording using the open diapason timbre of the Hammond electric organ.

As a part of the results of his study, he concluded that aural perception of melodic fragments is not aided by having diatonic harmony heard with them; in fact, harmonizations often decreased accurate perception to a significant degree.

In a series of correlations that Ritchie developed between his test and grades in sight singing and harmonic dictation, the correlations with sight singing (.73) and dictation (.67) are both significant at well past the .001 level. It is interesting to note Ritchie's conclusion:

> . . . This would indicate a high degree of association between ability in sight singing and achievement in taking dictation of the type which made up this test, and might have some relevance to the problem of the value of drill in dictation as an aid to sight singing.[1]

Sight Singing

Programmed Learning in Sight Singing

Kanable[2] conducted a study to compare the

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[1]Ibid., p. 137.

[2]Betty Mae Kanable, "An Experimental Study Comparing Programmed Instruction with Classroom Teaching of Sight Singing" (unpublished Ph.D. dissertation, Northwestern University, 1964).

effectiveness of a self-instructional sight singing method utilizing a programmed course of study and tape recorder with a conventional teacher-classroom method. Students who participated in the experiment were enrolled in the High School Music Program that was held on the Northwestern University campus for a three-week period in the summer of 1962. The objectives of the study were to determine:

1. if there is a significant difference in sight singing scores as a function of the method of training.
2. if there is a significant correlation between sight singing scores of control subjects and ability in tonal memory, and that of the correlation of sight singing scores of experimental subjects and ability in tonal memory.[1]

The experimental group studied individually with the programmed text and tape material. The text contained theoretical concepts and practice material. The tapes included music examples for practice in addition to the starting pitch, tempo, and correct performance of the sight singing problem. The tape recorder enabled each student to hear the master tape alone, to record his answer, and to hear his answer, which was then followed by the correct solution.

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[1] Ibid., pp. 13-17.

The control group met as a class and used the same type of materials that were contained in the programmed course. As a means of comparing the two groups, pre- and post-sight singing scores were used as the criterion instrument.

Results[1] of the experiment revealed significant achievement between pre- and post-test scores for both the experimental and control groups. There was no significant difference at the five per cent level of confidence in improvement according to learning method. Kanable concluded that it is possible to learn to sight sing using the self-instructional method.

Correlations were significant in both groups between tonal memory and sight singing scores on the pre-test and only the experimental group on the post-test. The investigator concluded that the lower correlation of these factors by the control group on the post-test was due to the difference in training method.

Smith[2] conducted a study to test a sight singing program of self-instruction in comparison to specific classroom situations using a standard text. "A Program for Self-Instruction in Sight Singing" was used for the

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[1] Ibid., pp. 103-107.

[2] James Craig Smith, "A Performance Test of Kanable's 'A Program for Self-Instruction in Sight Singing'" (unpublished Ph.D. dissertation, Florida State Univeristy, 1968).

study. Fifty-two freshman music students of Florida State University were involved in the study.

A pre- and post-sight singing test was devised to evaluate the sample. On the basis of the pre-test scores, students were assigned to four training procedure groups as follows:

1. Experimental Group I - Kanable's Program
2. Experimental Group II - taught by the author in the classroom
3. Experimental Group III - taught by another instructor in the classroom.
4. Control Group - received no instruction.[1]

The raw data of the pre- and post-test errors in sight singing indicate that in the rank order of mean error reduction, the groups ranked as follows:

	Mean error[2] Reduction
Experimental Group I	123
Experimental Group II	95
Experimental Group III	56
Control Group	51

A Mann Whitney U test was used to compare all subjects of the experimental groups to the control group to ascertain if any improvement could be ascribed to instructional procedures. The Z value indicated that

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[1] Ibid., pp. 10-11.

[2] Ibid., pp. 18-20.

there was no significant difference when this comparison was made.

The analysis[1] of the results indicated that there was no significant difference in the improvement of sight singing performance by students who received 1) programmed instruction, 2) classroom instruction, or 3) no instruction. As a matter of fact, students who received no instruction improved almost as much as those who received programmed or classroom instruction. Furthermore, there was a lack of significant difference in the improvement of sight singing regardless of whether students spent from 0 to 20 hours in specifically designed instructional programs intended to improve sight singing performance. On the basis of this study, it was concluded that sight singing performance does not improve regardless of the training methods that are used.

Other Training Procedures in Sight Singing

Bolden[2] investigated the extent of the influence, if any, of the piano, syllables/letters, and recorder on the growth in sight singing and rhythmic reading, as well as the effectiveness of different modes of instruction as

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[1] Ibid., pp. 28-30.

[2] Joyce Inez Bolden, "The Influence of Selected Factors on Growth in Sight Singing and Rhythmic Gain" (unpublished Ph.D. dissertation, Michigan State University, 1967).

growth regulators in sight singing and rhythmic reading. The study involved 348 elementary education majors in the course entitled Music Foundations at Michigan State University. Three teachers taught three sections each in which a different mode of instruction was used: piano keyboard, syllables/letters, and recorder. For evaluation purposes, students were given individual pre- and post-tests in sight singing, the Kwalwasser-Ruch Test of Musical Accomplishment, and a musical background questionnaire.

The three groups were designated as follows: Group I--Piano, Group II--Syllables/Letters, and Group III--Recorder. Prior to the experiment, the groups were found to be basically equal in regard to prior music training and scores on the Kwalwasser-Ruch test.

Results[1] of the study showed that Groups I and II, with rhythmic mean gains of 10.96 and 11.12, respectively, exhibited larger mean gains than Group III (5.89), with a resulting difference in mean gains at the one-half per cent level of confidence. Group II also showed the highest mean gain in sight singing (Group I-2.78, Group II-3.08, and Group III-2.38); however, the difference in mean gain was not statistically significant at the .05 level. Group II achieved the highest total gain, significant

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[1] Ibid., pp. 58-61.

at the one-half per cent level.

It was concluded that:

1. the syllables/letters training procedure was more effective than the other two modes of instruction in rhythmic reading gain and total gain; however, the increase in sight singing skill was not significant in comparison with the other modes of instruction.

2. the Kwalwasser-Ruch Test of Musical Accomplishment scores did not relate to any of the areas tested: rhythmic reading gain, sight singing gain, or total gain.

3. musical training exerted significant influence on each group individually in sight singing, but there was no relationship between the amount of training and growth in rhythmic reading and total gain.[1]

Marquis[2] investigated the relative difficulty of various intervals in sight singing performance with the following objectives:

1. To determine whether first year college students majoring in music perform with different degrees of skill on given kinds of intervals sung at sight in melodies when they are presented under different conditions of scale, harmony, and tonality (melodic context).

2. To determine whether these same students tend to perform similarly with respect to given kinds of intervals when they are sung at sight in isolation.

3. To determine whether the degree of skill of these students in sight singing intervals in isolation differs from that in singing them

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[1] Ibid., pp. 60-61.

[2] James Henry Marquis, "A Study of Interval Problems in Sight Singing Performance with Consideration of the Effect of Context" (unpublished Ph.D. dissertation, University of Iowa, 1963).

under different conditions of melodic context.[1]

Fifty-two students were tested on two criterion tests: 1) an Isolated Intervals Test, comprising the twelve intervals from minor second to perfect octave in ascending and descending order; 2) a Melodic Sight Singing Test comprising a total of 220 of the same kinds of intervals which the Isolated Intervals Test contains. The measurable effects of rhythm were controlled in order to permit a valid study of the experimental factors.

In most of the intervals tested, differences in percentage of error were found to be consistently significant. These significant differences were in consistent accord with differences in the contextual setting in which the intervals appeared. Among the intervals tested, those which tended not to show differences in error were the minor and major seventh.

The analysis of results indicated that: 1) when rhythm is held constant, changes in scalar, harmonic, and tonal conditions of the melody are influential in causing skill in the performance of intervals to vary significantly; 2) no significant tendency was found for students to perform similarly on intervals when they are presented in isolation and when they are presented in context. This absence of significant relationship seems to support the

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[1] Ibid., pp. 1-2.

inference that the difficulty of performing intervals in melodic settings vary from that of isolated intervals. In a given melodic setting, an interval might show no significant difference in percentage of error from its isolated setting; however, when the melodic setting changed, a significant difference in percentage of error usually accompanied the change. Marquis concluded that the contextual setting of intervals significantly affects the ability to sing intervals.[1]

Tachistoscopic Drill in Sight Singing

Ray[2] conducted a study at Western Michigan University to compare two different types of drill with pitch patterns. Twenty-two subjects were selected at random from a freshman theory class and individually given a sight singing test. This pre-test and a post-test were used as the criterion instrument.

On the basis of the pre-test results, the experimental and control groups were formed as paired groups with ten subjects in each group. The experimental group used the tachistoscope in the drilling of pitch patterns

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[1] Ibid., pp. 168-174.

[2] Harry Burton Ray, "An Experimental Approach to the Reading of Pitch Notation" (unpublished Ph.D. dissertation, Indiana University, 1964).

of varying length and complexity that were not identified with a particular key or mode. The control group did not use the tachistoscope in the drill and employed pitch patterns based on specific keys and modes. In both groups, emphasis was placed on clarification of whole- and half-step relationships. A total of fourteen hours of drill was given to each group over a ten-week period. Drills were thirty minutes in length, four days a week.

The analysis[1] of results indicate that the difference between the pre- and post-test scores for note errors was found to be significant beyond the one per cent level of confidence for the experimental group, and beyond the five per cent level for the control group. The difference in interval errors was found to be significant beyond the one per cent level for both groups. Although the results indicate that both groups improved significantly, there was no significant difference in the improvement made between the groups.

It was concluded that hidden variables within the experiment and practical limitations which developed during the study may have altered the outcome. Visual complexity and musical complexity were found to be independent and sometimes conflicting elements, both of which must be taken into account in studies of music reading.

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[1] Ibid., pp. 141-158.

Since both groups improved significantly as a result of the drills, it was concluded that emphasis on whole- and half-step relationships is an efficient approach to the teaching of sight singing of pitch patterns.

Hammer[1] conducted a study with fourth grade music classes in Grand Junction, Colorado, to determine the effects of tachistoscopic training on the development of melodic sight singing ability, and to compare this training with the conventional method of instruction. The tonal pattern approach was stressed, usually using tonal patterns that were compiled by Petzold. A sight singing test was constructed to measure the individual sight singability of each student.

The experiment was taught in two classes. Each group received the same instruction with the exception of the time devoted to tonal practice. Conventional techniques were used for the control group, whereas the experimental group used tachistoscopic procedures. After thirty-eight bi-weekly meetings for each class, the training procedures were reversed for both groups. Fourteen tri-weekly meetings were held for the second part of the experiment.

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[1]Harry Hammer, "An Experimental Study of the Use of the Tachistoscope in the Teaching of Melodic Sight Singing" (unpublished Ph.D. dissertation, University of Colorado, 1961).

The analysis[1] of the results indicated that the method employed in both classes was effective in teaching melodic sight singing. Within this method, the tachistoscopic techniques were significantly more effective than conventional techniques.

Barnes[2] conducted a study to investigate the effect of group drill in sight singing certain intervals upon the ability of the individual to sight read these intervals, and to determine the correlation between this ability to sight read intervals and the ability to sight sing melodies composed of these intervals. The investigation of the order of interval difficulty was of secondary concern. An original interval sight singing test and an original melody sight singing test were devised to evaluate the relative sight singing performances of a control group and an experimental group composed of members of a college freshman theory class at Indiana State Teachers College. The groups were equated on the basis of the percentile rank on the American Council on Education Psychological Examination and the Aliferis Music Achievement Test, and the composite score on the Madison Interval and Barnes Interval tests.

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[1] Ibid., pp. 172-173.

[2] Joseph Woodrow Barnes, "An Experimental Study of Interval Drill as It Affects Sight Singing Skill" (unpublished Ph.D. dissertation, Indiana University, 1960).

Both groups were involved in the same instruction except for the ten hours and twenty-five minutes of tachistoscopic drill that the experimental group received in the sight singing of intervals during the ten-week study.

Results[1] of the study revealed that the experimental group performed significantly better than the control group in the sight singing of both intervals and melody; however, the improvement in the ability to sight sing melody was not as significant as the improvement in the ability to sight sing intervals. A high correlation was found between the ability to sight sing intervals and the ability to sight sing melody.

In conclusion, Barnes states:

> The significant improvement in the ability of the experimental group to sing melody as the apparent result of approximately ten and one-half hours of drill in sight singing of intervals argues strongly for the inclusion of the latter in the instructional program as a device to aid sight singing. This is particularly true in view of the fact that, within the limits of this study, the interval drill was found to be as effective in aiding the singing of "conventional," that is, major, minor, non-modulating melody, as in the sight singing of "unconventional," that is, modal modulating melody.
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> However, since the improvement in the ability to sight sing intervals did not reflect a direct improvement in the ability to sight sing melody made-up of these intervals, it would seem that the latter ability is more complex than the former and is dependent on more factors than were

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[1] Ibid., pp. 58-79.

accounted for in this experiment.[1]

Stokes[2] investigated the possibility of improving music reading through tachistoscopic drill. Seventh and eighth grade students were formed into experimental and control groups, 160 subjects to each group, on the basis of matched scores on the Knuth test (recognition of melodic examples) and similarities in intellectual and academic achievement.

The experimental group received one class-lesson per week of tachistoscopic training over the twenty-one week period of the study. The exercise materials were designed to emphasize span of recognition and consisted of 1/10-second flash exposures of half-note melodic patterns of varying length and contour. The subjects were required to circle (S) similar or (D) different after deciding if the projected melodic pattern was similar or different than the example played on the piano.

At the conclusion of the study, control and experimental groups were retested. The results revealed that the experimental group showed greater improvement in the recognition of flashed examples; however, under actual music reading conditions, the experimental group showed no

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[1] Ibid., pp. 84-85.

[2] Charles F. Stokes, "An Experimental Study of Tachistoscopic Training in Reading Music" (unpublished Ph.D. dissertation, Teachers' College, University of Cincinnati, 1944).

improvement over the control group. On the basis of the tests, Stokes questioned the usefulness of tachistoscopic training as a technique for the improvement of music reading.

Melodic Dictation

Lidral[1] conducted a study in melodic dictation in order to study the effects that extra help would have on students in the form of extra class sessions and tutorial services. Specifically, the purpose of the study was to:

1. discover some special methods which would assist students in their study of dictation.
2. prove the effectiveness of these special methods in improving musical understanding as measured by success in melodic dictation.
3. attempt to discover some organization of the predictive and background material available at the beginning of the school year when the students entered the class that could be used to diagnose cases liable to have dictation difficulties. This would permit the instructor to single out possible dictation problems for early attention for the improvement or even the prevention of many difficulties before the difficulties could arise.[2]

Two methods were used in an attempt to achieve the objectives of the study:

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[1]Frank Wayne Lidral, "A Study in the Pedagogy of Melodic Dictation" (unpublished Ph.D. dissertation, Eastman School of Music, University of Rochester, 1956).

[2]Ibid., pp. 12-13.

1. Modified Case Study, which included scores made on the Seashore Measures, an estimate of the students' relative ability in their major applied music areas, and mental abilities as shown on standardized tests. These measures were combined into Seashore Applied Mental (SAM) profiles, and the pairings that were used in the experiment were accomplished on the basis of similarities in these profiles.

2. Experimental Methods: origin and definition of dictation problems, organization of research methods, and analysis of and interpretation of the experimental observations.[1]

Sixty students were involved in the study, who were members of the author's first year theory classes at Central Missouri State College. The experiment extended over a two-year period. The 1953-1954 class was designated as the control group, and the 1954-1955 class as the experimental group. Each group had the following class instruction:

1. Dictation: drills four days a week; sixteen tests averaging once every two weeks.

2. Sight Singing: recitations once a week.

3. Theory: written theory one full-period a week.[2]

The experimental group was divided into five training procedure groups according to weaknesses that developed in the class. They were given extra help during classtime or in evening sessions throughout the year:

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[1] Ibid., pp. 34.

[2] Ibid., pp. 31-33.

I. Extra Tutorial Sessions (Twenty-six weekly evening sessions on a voluntary basis).

II. Tone Matching and Octave Sense Drills (Twenty-six weekly evening drills).

III. Corrective Listening Drills (Seven weekly fifteen-minute drills during the regular class period).

IV. Melodic Memory Drills (Seven weekly fifteen-minute drills during the regular class period).

V. Rhythmic Drill Concentration (Seven weekly fifteen-minute drills correlated with all theory work done in class).[1]

On the sixteen melodic dictation tests, it was found that the experimental group made an improvement over the control group of 2.9 per cent less errors in rhythm, 2.8 per cent less errors in pitch, and 2.8 per cent less total errors. Another comparison shows that the experimental group made better averages in rhythm on 56 per cent of the tests and better averages in pitch and total score on 63 per cent of the tests. These totals are more impressive if other tests and prior musical experiences are considered. The control group actually had a 5.1 per cent higher (SAM) profile total.[2]

The following musical background materials and tests were found to have a significant association with higher melodic dictation achievement:

1. The choice of a keyboard instrument as the major performance medium.

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[1] Ibid., pp. 221-237.

[2] Ibid., pp. 245-247.

2. Eight or more years' background of formal study in applied music.

3. Higher scores on the Seashore Measures in pitch, tonal memory, and total score.

4. Higher estimates of applied music ability.

5. Higher percentile rankings on the Aliferis Achievement Test.[1]

The following background materials were found to have no significant association with higher melodic dictation achievement:

1. Age.

2. Sex.

3. Foreign language instruction.

4. Higher rankings in a high school graduating class.

5. Majoring as opposed to minoring in music.

6. The choice of an applied instrument other than a keyboard instrument as the performance medium.

7. High school or college courses in theory.

8. More ensemble music experience.

9. More college music studies in areas other than theory.

10. Higher scores on the Seashore Measures in loudness, rhythm, time, or timbre.[2]

In conclusion, Lidral states:

There can be no question as to the superiority of the

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[1] Ibid., p. 243

[2] Ibid., pp. 243-244.

> experimental group in melodic dictation. The tabulation of errors made it possible to discover in which areas of pitch and rhythm the greatest difficulties lay. They also made it possible to discover the types of errors most common to the three levels of dictation proficiency: those students ranking high, those in the middle group, and those having difficulties. This ranking of errors according to proficiency levels in melodic dictation also shows the areas in which students in each of the two higher groups are unlikely to have difficulty. The considerations developed in this paragraph should be of great use to instructors planning dictation instruction, in pointing out the areas of greater difficulty, in lessening the emphasis in certain areas for more advanced groups.[1]
>
> In the author's opinion, the most effective experimental method was the use of extra tutorial sessions. These sessions were made available to the experimental group during the year of study. The value of this procedure lies in the increased opportunity for the teacher to give students individual attention in the overcoming of their problems. The sessions make possible the clarification of misunderstandings for the individual student, and the instructor is not restricted in choice of method or emphasis.[2]

Langford[3] conducted a study at Wayne State University to determine whether a relationship exists between the actual amount of practice time spent in melodic dictation and the amount of improvement shown over a given period of time. The study lasted one year and involved a total of forty-eight students: twenty-seven the first

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[1] Ibid., p. 247.

[2] Ibid., p. 248.

[3] Harry M. Langford, "An Experimental Study of the Effect of Practice Upon Improvement in Melodic Dictation" (unpublished Ph.D. dissertation, Michigan State University, 1959).

semester and twenty-one the second semester. A pre- and post-test melodic dictation test was given to each student; in addition, the Drake and Seashore musical aptitude tests were given to enable the investigator to form three matched groups.

Each group was assigned a different number of hours to practice melodic dictation during the semester, i.e., ten, twenty, and forty hours. At the end of the semester, the post-test was given and the scores derived were subjected to analysis. The experiment was replicated in the second semester.

Since no recognizable pattern was seen to emerge from the experiment in either semester, the two experiments were combined into one large group in order to increase the population. As in each of the individual experiments, the statistics of the combined experimental group was subjected to a "t" test to evaluate the significance of the total gains within each group. Through the analysis of variance, an F ratio was computed to determine the relationship between practice time and improvement.

The analysis of results indicated that:

1. Although the mean gains within each group for each semester were found to be significant, no statistical relationship was found to exist in either experiment between the amount of time spent in practicing melodic dictation and improvement.

2. Practice is effective, but improvement is not

necessarily the result of, nor proportionated to, one factor only, i.e., the amount of practice time.

3. All students with only one exception made improvement.

4. The twenty-hour groups, as a whole, seemed to show a somewhat higher mean gain than either the ten-or forty-hour groups.

5. The relatively small population of this study created limitations which must be recognized in the interpretation and application of the results.[1]

In computing the correlation coefficient between the results of the various tests used,

> The highest simple correlation was between the Drake Musical Memory Test and the Seashore Tonal Memory Test for the entire population (.504); however, the correlations between these tests and the Melodic Dictation Test No. 2 are not significant. This would seem to indicate that these tests are not necessarily good predictors of success in melodic dictation.[2]

Langford continued the experiment for a third semester in which no specified hours were assigned:

> Since all students improved their score on Melodic Dictation Test 2 during a third semester when no specific hours of practice was assigned to a new group of students, this is further proof that the time element is not the determining factor in the extent of improvement. A number of students in this third semester did no practicing at all outside of class and yet achieved considerable gain.[3]

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[1] Ibid., pp. 77-91.

[2] Ibid., p. 81.

[3] Ibid., p. 82.

Predictors of Success in Sight Singing and Melodic Dictation

Tests and Measures

Lehman defines Tests and Measures as follows:

> The term "test" is used here in its broadest sense. It refers to a series of questions or exercises designed to measure the skill, knowledge, capacity, achievement, or ability of an individual or a group. "Measurement" refers to the act or process of ascertaining the quantity, extent, or degree of a personal trait or accomplishment. In modern educational terminology, "measurement" has been largely superseded by "evaluation," which implies a value judgment beyond an ordinary quantitative determination.[1]

The validity of standardized music tests has been a subject of controversy since their inception. Psychologists and musicians have defended and opposed their use.

James Mursell, one of the earlier music educators who opposed the existing standardized tests, stated:

> Psychologists of the highest repute, such as Ogden, Watt, Revecz, and Farnsworth have carefully and conclusively shown that existing music tests are open to fundamental criticism, and must be used with much reserve and care.
>
> The woods are full of published tests with dishonest titles . . . . We think the Terman Group Test of Intelligence really does measure something--though just what it is we know not--called general intelligence not because Dr. Terman says it does, but because Dr. Terman has developed a proof of his claim, and because he has published his proof so that we can study it and form our own judgment. What then about the music tests? After a careful examination of all the research

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[1]Paul R. Lehman, Tests and Measurements in Music (Englewood Cliffs, N. J., 1968), p. x.

> studies I have been able to find, and they are not few, I am compelled to the opinion that in the case both of the Seashore Measures of Musical Talent and the Kwalwasser-Dykema Music Tests such proof is lacking.[1]

In spite of his reservations, Mursell expressed a desire for a valid prognostic measure:

> It would be a research instrument which we sorely need, and also an invaluable agency for educational guidance. But I am not convinced that any such exist, although I believe that they could be developed.[2]

In answer to Mursell, Carl Seashore stated:

> They (the tests) have been validated for what they purport to measure. This is an internal validation in terms of success in the isolation of all other factors in the measurement . . . . They should not be validated in terms of their showing on an omnibus theory . . . . Validation of pitch against the violinist's artistic performance in the actual musical situation would require that we correlate the sense of pitch with objective records of musical performance in pitch intonation or ability to hear artistic pitch deviation in the musical situation--not with the countless other merits or demerits that the violinist may exhibit.[3]

Seashore, therefore, believed musicality to consist of a large number of isolated, limited characteristics rather than as a single "omnibus" factor.

In his earlier studies, Seashore claimed that the

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[1]James L. Mursell, "What About Music Tests?" Music Educators Journal, XXIV (October-November, 1937), 16.

[2]Ibid., p. 16.

[3]Carl E. Seashore, "The Psychology of Music," Music Educators Journal, XXIV (December, 1937), 26.

musical aptitudes such as those used in his tests (pitch, tonal memory, etc.) have physiological limits that are set at birth and are not improvable through practice; however, since 1940, Seashore

> concedes that his tests do not necessarily measure physiological limits and regards them as measures of abilities which are subject to improvement through environmental influences . . . .[1]

The following studies reveal the results of some of the tests and measurements that have been used in an attempt to predict success in sight singing or melodic dictation.

Hollingsworth[2] measured children whose I.Q. scores were between 135 and 190 on the Seashore Measures of Musical Talent and concluded that "intellectually superior children are not superior in the Seashore tests." The range of average percentiles for the group on specific auditory tests were from 47 to 58, which is within the normally expected range.

Salisbury and Smith[3] attempted to predict success

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[1]Ruth F. Wyatt, "The Improvability of Pitch Discrimination," Psychological Monographs, LVIII (1945), 55.

[2]Leta S. Hollingsworth, "Musical Sensitivity of Children Who Test above 135 I.Q. (Stanford-Binet)," Journal of Educational Psychology, XVII (1926), 2.

[3]F. S. Salisbury and H. B. Smith, "Prognosis of Sight Singing Ability of Normal School Students," Journal of Applied Psychology, XIII (October, 1929), 425-439.

in sight singing of entering freshman music students at the State Normal School, Bellingham, Washington, by using a sight singing test of four short songs as the criterion instrument with the following measures: Seashore Measures of Musical Talent, a dictation test of short melodic patterns, intelligence scores, musical background, and final grades at the end of the first quarter of college study.

The study covered a three-year period in which the first year was devoted to investigation and preparation of materials, the second to an evaluation of the materials with an experimental group, and the third to verification of the results with a second group. The results indicated that the Seashore tests of tonal memory and pitch, and the dictation test had the highest correlation with the sight singing criterion, and the authors stated that the continued use of these three tests offered satisfactory results.

Aural Acuity Tests	Sight Singing Criterion		
	r (correlations)	B (beta weights)	Per Cent of Influence
Seashore Pitch	.64	.22	.14
Seashore Tonal Memory	.66	.22	.14
Original Dictation	.78	.54	.42

In a study at Colorado State Teachers College,

Chadwick[1] investigated certain factors in predicting success in sight singing: Seashore tests of pitch, rhythm, tonal memory, time, and intensity, scores from the Teachers College Achievement Test, the American Council Psychological Examination, and a sight singing test that was in use at Colorado State Teachers College.

The sight singing test had high correlations with the Seashore tests, but low correlations with the intelligence tests.

Tests	Sight Singing Criterion[2]	
	r	Per Cent of Influence
Seashore Measures of Musical Talent (combined)	.75	.50
American Council Psychological Examination (Intelligence)	.64	.20
Teachers College Achievement Test	.56	.02

Chadwick concluded that:

> In determining probable success in music, musical talent tests are about two and one-half times as indicative as intelligence tests, and twenty-five times as effective as tests of general knowledge of school subjects.[3]

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[1]J. E. Chadwick, "Predicting Success in Sight Singing," Journal of Applied Psychology, XVII (December, 1933), 671-674.

[2]Ibid., p. 673.

[3]Ibid., p. 674.

In a study conducted at the Eastern Montana State Normal School, Dean[1] investigated the following factors in determining the influence on sight singing ability: Seashore Measures of Musical Talent, intelligence, and musical background. The Seashore Measures and the Terman Group Mental Test were administered to two successive groups of entering freshman students in 1934 and 1935. Correlations were obtained between these tests to determine the relationship of intelligence and musical ability, and between the Terman test and the sight singing scores to determine the relationship of intelligence and musical schievement.

Out of a total of 194 students who were involved in the study, the results indicated low correlations between intelligence and musical ability, and between intelligence and sight singing achievement. The Seashore pitch and tonal memory tests had the highest correlations, whereas the other Seashore tests had low correlations. Musical background was found to be of greater influence than intelligence, but not as great as the Seashore pitch and tonal memory tests.

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[1]Charles Dean, "Predicting Sight Singing Ability in Teacher Education," Journal of Educational Psychology, XVIII (November, 1937), pp. 601-608.

Zimmerman[1] found in the relationship of musical environment to choral sight-reading ability that instrumental training, early interest and continued enjoyment in music, and the use of a systematic method or methods in sight reading were important factors in sight singing ability. Musical experiences that require no specific discipline with notation do not tend to contribute to this ability.[2]

Sheldon[3] conducted a study to examine musical pitch reproduction as related to various predictors with the purpose of establishing the relationship of these predictors to the success of non-music majors to sing in pitch. Seventy-eight students at San Diego State College were involved in the study in 1964 and were measured with the Seashore Measures of Musical Talent. In addition, they answered a musical experience questionnaire, and the ACT aptitude scores were included. These eight variables were considered in relation to the criterion measure: "Sing the Interval" pitch reproduction test.

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[1]Robert C. Zimmerman, "Relationship of Musical Environment to Choral Sight Reading Ability," (unpublished Ph.D. dissertation, University of Oregon, 1962).

[2]For more complete information regarding the Zimmerman study, please refer to Chapter I, pp. 4-5.

[3]John Maurice Sheldon, "Prediction of Success in Pitch Reproduction for the Non-Music Major in College," (unpublished Ph.D. dissertation, University of California, 1964).

The results indicated that 1) the Seashore Pitch and Tonal Memory tests are valid in predicting pitch reproduction, 2) musical experience correlates with later success in pitch reproduction at the one per cent level of confidence, and 3) evidence indicates that pitch-deficient students may be taught to sing on pitch.

Wakeland[1] conducted a study of the teaching of sight singing of melodic configurations to a group of thirty volunteer secondary students from grades seven to eleven at the University School in Carbondale, Illinois. The enquiry centered on the teaching of relative pitch relationships that are found in certain three-note melodic configurations within the key of C.

The multiple correlations that were used to study the relationships between the sight singing criterion test and scores made on sections of the Differential Aptitude Battery, the Brown-Carlsen Listening Comprehension Test, and the Drake Music Aptitude Tests revealed that the proportions of accountable variance common to these tests and the criterion measure would not support their use in a school situation for the purpose of predicting sight singing achievement. In addition, sight singing achievement correlated negatively with age, i.e., the younger

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[1]William Floyd Wakeland, "A Study of the Teaching of Sight Singing of Melodic Configurations to a Group of Secondary-School Students by Means of a Teaching Machine," (unpublished Ph.D. dissertation, Southern Illinois University, 1964).

students excelled.[1]

Luce[2] investigated the sight reading and ear playing abilities of ninety-eight band students from Lincoln Northeast High School, Lincoln, Nebraska to determine if relationships exist between these abilities and the following student characteristics: 1) intelligence quotients, 2) mental ages, 3) leadership status, 4) music goals, 5) private instruction, and 6) group instruction. The sight reading test consisted of eight short examples, and the ear playing test consisted of reproducing six tape-recorded examples that were played on a pipe organ. The Henmon-Nelson Test of Mental Ability provided the intelligence quotients. Students' mental ages were computed from school records and tests, and information for the other characteristics was obtained through a musical questionnaire and faculty ratings.

The results indicated a high correlation between the ability to sight read and reproduce music immediately by ear; in addition, all the student characteristics had high correlations with the combined criterion instrument of sight reading and ear playing.[3]

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[1] Ibid., pp. 99-106.

[2] John R. Luce, "Sight-Reading and Ear-Playing Abilities as Related to Instrumental Music Students," Journal of Research in Music Education, XIII, Part 2 (Summer, 1965), 101-109.

[3] Ibid., pp. 105-109.

Klemish[1] conducted a study in 1965 to compare two methods of teaching music reading to 102 first grade students from the Oshkosh, Wisconsin public schools. Two of the groups were randomly selected from Title I schools and assigned to Method I or II, and the other two groups were drawn from non-Title I schools and assigned to one method or the other.

Among other results of the study, the socio-economic background of the students showed a significant relationship to success in singing:

> The outcomes of this research further emphasize that homes in the higher socio-economic levels provide an environment which leads to a greater readiness to learn. Children in Level I, the best achievers, came from homes where the parents were professional or semi-professional people or engaged in high income business. Not only did these children achieve the highest scores on the post-test, but they scored highest on those parts of the pre-test requiring a singing response. This implies that they were best prepared, as they entered first grade, to proceed with the music reading activities.[2]

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[1]Janice J. Klemish, "A Comparative Study of Two Methods of Teaching Music Reading to First Grade Children by Developing a Vocabulary of Tonal Patterns," (unpublished Ph.D. dissertation, University of Wisconsin, 1968).

[2]Ibid., pp. 141-142.

CHAPTER III

METHODS AND PROCEDURES

Sight Singing

Miller[1] provides an interesting and comprehensive survey of sight singing from that of the ancient Greeks to the present day.

The Romans borrowed the tetrachordal system from the Greeks (tah, tā, toh, te), which included mutation-transposition. The sol-fa system of instruction that followed was attributed to Guido of Arezzo (990-1050) and was based on an hexachordal plan that was an extension of the tetrachord. The syllabic change was derived from the "Hymn to St. John the Baptist," Ut queant laxis, in which the first syllable of each line, ascending to the next step of the scale, formed the sol-fa.

In order to increase the hexachordal range, a modulation system was developed that has similarities to the "movable-do" system (intervalic relationship rather than exact pitch).

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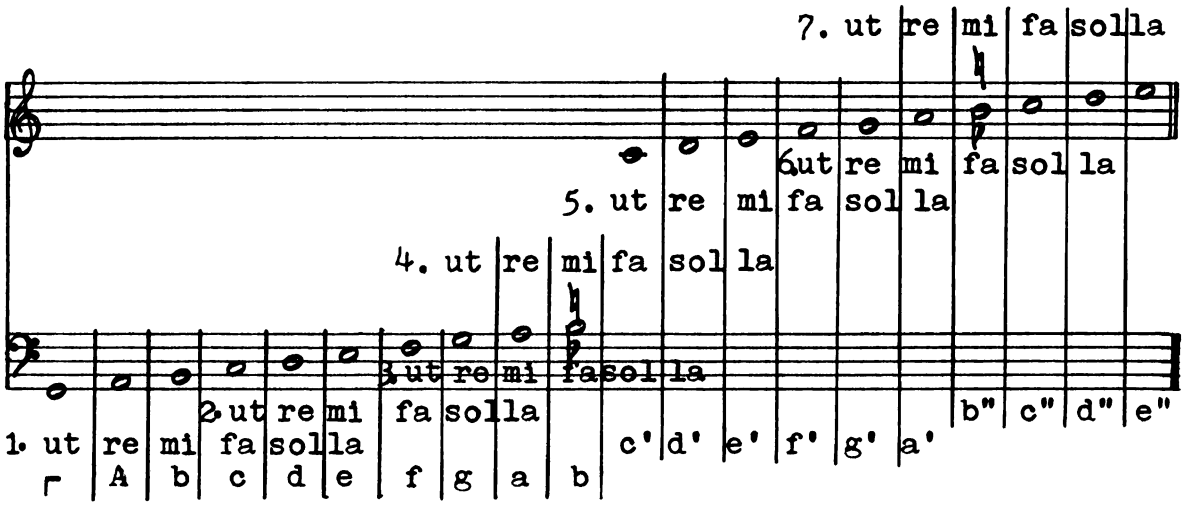
[1]Harold Amadeus Miller, "Sight Singing Yesterday and Today (Particularly from 1700 to 1900, in England and the United States)" (unpublished Master's Thesis, Eastman School of Music, University of Rochester, 1941).

System of Hexachords[1]



When the trend away from the ecclesiastical modes took place in the latter part of the sixteenth century, along with the prominent use of the leading tone and more extended use of chromatic tones and transposition, a change was necessary.

> This step seems to have been taken in 1599 by Erich van der Putten of Dodrecht, who suggested the use of "bi"--no doubt using the third and fourth letters of labii from the old hymn to St. John. The adoption of "si" came shortly after, being advocated by Sethus Calvisius in 1611.[2]

"Do" was first introduced as a substitute for "ut" by Bonocini in 1673. The five additional syllables for the sharps and flats were pa, bo, tu, de, and no. With these additions, the hexachordal system gradually fell into disuse during the seventeenth century.

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[1]Donald Jay Grout, A History of Western Music (New York: W. W. Norton & Company, Inc., 1960), p. 55.

[2]Miller, op. cit., p. 4.

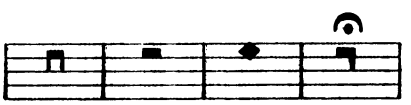
England

There was much musical activity in Shakespeare's time, as is evidenced by the following quote:

> A young gentlewoman was supposed to be able to read and write, to play upon the virginal, lute, and cittern, and to read the book at sight.[1]

However, the great internal struggles of England during the Reformation took its toll on the musical activities of the amateur musician. In an effort to improve the prevailing musical climate, John Merbecke published a musical setting of the Book of Common Prayer a year after its introduction in 1549, in which the following explanation is given in its preface:

> In this booke is conteyned so muche of the Order of Common Prayer as it is to be sung in Churches, wherein are used only iiii sortes of notes:



> The first is a sterne note and is a breve. The second is a square note and is a semi-breve. The iii is a prycke and is a mynyme. And where there is a prycke by the square note, that prycke is halfe as much as the note that goeth before it. The iiii is a close and is used only at ye end of a verse.[2]

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[1] M. Snowden, "The History of Old English Music," Music Teachers National Association Proceedings, XXX (1935), 214.

[2] Miller, op. cit., p. 6, citing John Merbecke in the Book of Common Prayer.

In the early nineteenth century, Sarah Anne Glover continued to foster singing in the lay person by developing her "sol-fa" notational system (about 1812),

> It was developed from earlier methods (Lancashire system) by Miss S. A. Glover and perfected about 1840 by John Curwen (1816-80). It is widely used for teaching purposes in England, and has also become known in some other countries, e.g., in Germany (under the name Tonika-Do).
>
> Tonic Solf-fa is a system of "movable-do," the tone syllables doh, ray, me, fah, soh, lah, te are used with reference to the key of the piece or any section thereof where there is a change of key. The syllables, or more properly, their initial consonants d r m f s l t are also used for the notation of the music in a manner reminiscent of the German keyboard tablatures of the sixteenth century.
>
> If the piece modulates into another key, this key is indicated (in different ways), and the tone syllables are now reckoned in the new key. For the indication of meter and rhythm, additional signs (horizontal strokes, single dots, colons, commas, etc.) are used.[1]

The "fixed-do" system (syllables corresponding to invariable pitches of notes) came into prominence during the middle of the nineteenth century under the influence of John Hullah, who taught about twenty-five thousand students from 1840 to 1860. Although successful at first, his system was found to be "unsuitable to the generality of learners, and fell into disuse"[2] in England.

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[1]Willi Apel, Harvard Dictionary of Music (Cambridge: Harvard University Press, 1962), p. 754.

[2]Miller, op. cit., p. 19, citing H. Dewey, History of English Music (London: John Curwen and Sons, 1895), p. 452.

At the same time, John Curwen became successful in spreading the teaching of the "movable-do" system. He anglicized the syllables (doh, ray, me, fah, soh, lah, te, doh) and adopted and revised Miss Glover's method to accommodate elaborate as well as simple music. His Grammar of Vocal Music appeared in 1843, followed by other publications, including Teacher's Manual of the Tonic Sol-Fa Method (1875) and Standard Course of the Tonic Sol-Fa Method (1880), in which he made use of manual signs that denoted the syllable and tone tendency in its scale position. His influence was extensive, having founded the Tonic Sol-Fa Association (1853) and the Tonic Sol-Fa College (1879). It was estimated, that during the years 1871-1872, the number of adults and children taught by this method totaled 315,000.

United States

Our first settlers relied on manuals of Psalmody from England, such as the Sternhold, Hopkins, and Hainsworth, until publication of the Bay Psalm Book in 1640. The accepted practice of singing psalms in the churches of that time was that of lining-out, called "Deaconing."

Teaching by note encountered strong opposition at first; however, small groups did form and eventually started the Singing School movement about 1720.

Many congregations in New England had divergent

> opinions as to whether they should sing by rote or note. In a few cases, the rote singers were in such violent disagreement that they refused to worship in the same church with the note singers. It was only after the elders had threatened them with excommunication that they returned to the church. This condition prevailed for upwards of ten years with the reformers (note singers) finally triumphant. Their victory provided the opportunity for music to be freed from the domination of the church. It also led to the establishment of the singing schools and the appearance of itinerant singing teachers.[1]

The "faw-so-law" method of singing, in which the four syllables--mi, fa, sol, la--were used, was the common method of the day, and it was not until 1795 with the publication of The Massachusetts Compiler by Holden, Holyoke, and Gram that "perhaps the first effort in America" was attempted to do away with the old sol-fa-ing and to give to each note of the scale its name corresponding with a fixed pitch."[2]

An example of the "faw-so-law" method of teaching is contained in the following quote:

> Time, sixty years ago; place, Southeastern Connecticut; locality, a suburban school-house; personnelle, the choire of a congregational Church, and two dozen young aspirants, thirsting for musical knowledge; teacher, a peripatetic Faw, sol-law-sol, who went from town to town during the winter months, holding two schools a week in each place; wages, two dollars a night, and board for himself and horse, distributed

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[1]J. Alex Gilfillan, "Singing Schools in America" (unpublished Master's Thesis, Eastman School of Music, University of Rochester, 1939), pp. 8-9.

[2]Miller, op. cit., p. 31, citing F. L. Ritter, Music in America (New York: C. Scribner's Sons, 1895), p. 85.

> from house to house among his patrons, according to hospitality or ability; instrument, none but pitch-pipe or tuning fork; qualifications of teacher, a knowledge of plain psalmody, ability to lead an old style 'set piece' manner, delighting in the soft, the gentle, the tender, piano and pianissimo, the sugar-candy style of vocal effect.
>
> For beginners, the first ordeal was trial of voice. The master made the circuit of the room and sounded a note or two for each separate neophyte to imitate. The youth who failed in ability to 'sound the notes' was banished to the back benches to play listener, and go home with the girls when school was out.
>
> The book put into our hands was Thomas Hasting's Musica Sacra, published in Utica in 1819, in shape like a modern hymnal. There were four pages of elements and 200 tunes, half of them written in three parts, wanting the alto or confounding it with the tenor. The elements were given out as a lesson to be memorized, studied by question and answer for a couple of evenings or so, and then we were supposed to be initiated into all mysteries of staff, signature, clef, flats, sharps, and naturals, notes, rests, scale, and above all, ability to find the place of 'mi.' Only four notes were in use--faw, sol, law, faw, sol, law, mi, faw. The table for 'mi' had to be recited as glibly as the catechism and was about as intelligible as some of its theology.[1]

Lowell Mason was an important music educator during the second quarter of the nineteenth century, and one who influenced future generations. He received valuable experience while training choirs in Savannah, Georgia, prior to his future work in Boston. He believed in mass music education and taught for a time without remuneration in order to establish music in the public school system of

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[1]John S. Curwen, Studies in Worship Music, 1st. series (London: J. Curwen and Sons, Ltd., 1880), pp. 115-117, citing Reverend E. Wentworth, D.D., My First Singing School.

Boston. He was instrumental in founding the Boston Academy of Music in 1833, where he introduced a training course for teachers. It was so successful that other training centers were established in other parts of the Northeast.

Mason visited Europe in 1837 and 1851 to gain further insight into the European training methods. He used the Guidonian syllables with the "movable-do" method and incorporated the Pestalozzian method into his teaching techniques. His famous Manual of Instruction (1834) used the Guidonian syllables, "movable-do" and the Galin-Paris-Cheve notation (numbers without syllables).

> The Singing School has established the routine of teaching "movable-do" and the transposition of the scale, beginning always with the key of C, the natural key; and Lowell Mason in 1834 had incorporated the Pestalozzian principles in his famous Manual, the central idea being "the thing before the sign," and these procedures and principles became the established musical pedagogy of the period.[1]

Melodic Dictation

Will[2] provides a comprehensive history of musical dictation, from its beginning stages in Europe to its worldwide acceptance wherever music is taught.

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[1]Edward B. Birge, "Public School Music's Contribution to Musical Education," Music Teachers National Association Proceedings, XXI (1926), 191.

[2]Roy Templeton Will, "The History of Development of Musical Dictation" (unpublished Master's Thesis, Eastman School of Music, University of Rochester, 1939).

Germany

It was not until Pfeiffer's methods incorporating Rousseau's ideas on figure notation and Pestalozzi's teaching methods were compiled and published by Naegeli[1] in 1809 that dictation appeared in an organized form.

Pfeiffer and Naegeli categorized and analyzed music into Rhythmics, Melodics, and Dynamics (time, tune, and force) and taught each element separately before combining them, as advocated by Pestalozzi. The importance of dictation was emphasized in the study of intervals in the 'Melodics' section. The instructor vocally dictated short figures which emphasized the interval under study. These exercises were either recited or written in figure notation by the class. Figure notation was used throughout the course in place of the sol-fa syllables, and staff notation was introduced in the advanced stages.[2]

France

Three early pioneers of musical dictation in France were Massimo, Galin, and Wilhem. Massimo's method had its beginning about 1816 in Paris. Monitors (advanced students) were used in addition to the instructor. The method

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[1] Hans George Naegeli, The Pestalozzian Method of Teaching Music, As Contrived by Pfeiffer (Zurich: Naegeli, 1809).

[2] Will, op. cit., pp. 8, 10-11.

consisted of exercises that were taken down on slates, and students who were having difficulty were helped by the monitors. After completion of the exercises, the instructor had each student sing what he had written, after which the mistakes were corrected. After the corrections, the class sang the exercises all together, individually, or in small groups.[1]

Pierre Galin's method[2] was based on the "musical hand" first used by Guido of Arezzo. The "musical hand" (Meloplaste) was a board with ruled lines and without clefs or notes. The teacher pointed to two places on the board, indicated the clef, and the pupils sang the intervals which he specified. After sufficient drill in this method, students were given dictation and short solfeggio exercises in a current "musical hand" that Galin developed for this purpose.[3]

Musical dictation in Wilhem's method[4] was called dictees parlees or spoken dictation and had similarities to the Galin method. It was based on a "Vocal Ladder," which was a diagram composed of eight horizontal lines

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[1]Will, op. cit., pp. 21-22.

[2]Pierre Galin, Exposition d'une methode pour l'enseignement de la musique (Paris: Rey et Gravier, 1818).

[3]Will, op. cit., pp. 22-23.

[4]Wilhem, Teaching of Singing in Classes, trans. J. A. Hamilton (New York: J. Winchester, New World Press, 1877).

corresponding to the natural scale, the lines between 3-4 and 7-8 being the smallest. A clef was placed on one of the lines, and intervals and exercises that were "pointed-out" by the instructor were sung by the students. Exercises at the end of each lesson emphasized a particular interval.[1]

Lavignac[2] developed the first complete course containing 4483 dictations at the Paris Conservatory between 1871 and 1881. The method and content of the course was not new, but it suggested the practical value of dictation to conservatories and music schools of that era. With few exceptions, most schools added it to their required courses. The text's value was due to its extensive detail and quality of its exercises, which are graded from easy to difficult and contain all types of rhythms, intervals, and key relationships.[3]

England

John Hullah was one of the first in England to incorporate dictation into his teaching methods. He adapted the Wilhem method to his training techniques, and although the method became the Wilhem-Hullah method, it was the same as Wilhem in both method and content.

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[1]Will, op. cit., pp. 26-33.

[2]Albert Lavignac, Cours Complet theorique et pratique de Dictee Musicale (Paris: Librarie Ch. Delagrave, 1881).

[3]Will, op. cit., p. 35.

John Curwen's first edition of his Grammar of Vocal Music, 1843, contained only a few suggestions and exercises for dictation in the more advanced lessons; however, he later saw the value of using dictation in the earlier stages of training and included it in this way in his revised edition. Curwen and the Tonic Sol-Fa-ists at first used only solfeggio exercises for dictation material, but later they used simple hymn tunes and folk songs.[1]

United States

> In 1834, a great singing movement commenced in the United States, when Dr. Lowell Mason, with the help of Messrs. W. C. Woodbridge and W. S. Porter, published the Manual of the Boston Academy of Music for instruction in the elements of music on the system of Pestalozzi. From that time until his death in August, 1872, he ceased not, by publishing, by lecturing, by holding Conventions of teachers, and above all, by his own rare skillfulness, in teaching to propagate the principles of Pfeiffer and Naegeli which had caused the regeneration of people's music in Germany. With him worked heartily Messrs. Woodbury, Bradbury, Root, and Seward, so that the states are filled with the Pestalozzian doctrine.[2]

Musical dictation as used in Mason's Manual is described by him:

> The teacher sings first one, then two measures, in a rhythmico-melodic manner. The scholars describe and tell how they are written; first, rhythmically or what kinds of notes, as half, quarter, etc.,

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[1]Will, op. cit., pp. 42-44.

[2]John Curwen, Teacher's Manual of the Sol-Fa Method (London: Tonic Sol-Fa Agency, 1875), p. 364.

> then melodically, by numerals, 1, 3,; and finally both in rhythm and melody, by telling the length (half, quarter) and elevation (1 or 3) of each note.[1]

Dictation was written in both figure and staff notation, and the pupils were required to sing figures and syllables. Other prominent men wrote practical courses of exercises that were to be used in connection with Mason's method. Among them were G. F. Root's Normal Musical Handbook and others by Bradbury and Seward.[2]

Several conservatories and music schools were established following the close of the Civil War (Oberlin Conservatory - 1865, Cincinnati Conservatory, New England Conservatory, Chicago Musical College - 1867, and Peabody Institute - 1869). These schools were staffed by European musicians and teachers, and the courses of study were patterned after the European conservatories and music schools.[3] Frank Damrosch included musical dictation in the course of training at the Institute of Musical Art since its founding in New York City in 1904.

> It was and still is my belief that the fundamental study in all subjects should be the training of the ear. Inasmuch as all tone relations are conveyed from the ear to the brain, it is important that this

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[1]Lowell Mason, Manual of the Boston Academy of Music (Boston: J. H. Wilkins and P. B. Carter, 1836), p. 117.

[2]Will, op. cit., p. 52.

[3]John T. Howard, A Short History of Music in America (New York: Cromwell Company, 1964), pp. 92-97.

> should not be merely a transitory impression but a conscious tone concept which registers clearly all pitch and rhythmic phenomena, and which enables one either to write down these impressions or to reproduce them by voice or instrument.[1]

Survey and Evaluation of Methods

In a study of the music curriculum in the public schools of New York State, Columbus[2] revealed statistics on areas of musical emphasis as well as some aspects of the methods that were used in teaching music reading.

In the small school districts with less than 500 enrollment, the elementary schools averaged two periods a week in vocal music, thirty minutes each class-period. Of the forty-two schools who returned questionnaires, five stressed music reading, and thirty-seven stressed music reading and appreciation. In music reading, thirty used syllables, three used numbers, and the remainder used a combination of syllables, numbers, and letters.[3]

Of the fifty schools reporting in the medium-sized school districts (500-1000), half of the schools met twice and the other half three times a week, averaging twenty to

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[1]Will, op. cit., p. 53, citing Frank Damrosch, Institute of Musical Art (New York: Juilliard School of Music Publication), p. 31.

[2]Frank J. Columbus, "A Study of Current Practices in the Public Schools of New York State" (unpublished Master's Thesis, 1949).

[3]Ibid., pp. 9-15.

twenty-five minutes each class-period. Music reading was stressed in eight schools, thirty-nine stressed music reading and appreciation, and two stressed appreciation. In music reading, forty-one used syllables, four used numbers, and five used a combination of syllables, numbers, and letters.[1]

Of nineteen schools reporting in the large school districts, vocal music classes averaged two periods a week, twenty-five minutes each class-period. Music reading was stressed in three schools, fifteen stressed music reading and appreciation, and one stressed appreciation. In music reading, twelve used syllables, one used numbers, two used a combination of syllables and numbers, and three used a combination of syllables, numbers, and letters.[2]

> There has been a great deal of controversy relative to certain teaching methods and devices, such as fixed-do, movable-do, numbers, letters, shaped notes, tonic sol-fa, and so forth. Unfortunately, much if not most opinion is based on practical experience, casual observations, or even prejudices, and is not the result of research findings.[3]

Absolute and Relative Tonal Systems

The conflict between the relative merits of teaching

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[1] Ibid., pp. 49-52.

[2] Ibid., pp. 78-82.

[3] James Woodrow Barnes, "An Experimental Study of Interval Drill as it Affects Sight Singing Skill" (unpublished Ph.D. dissertation, Indiana University, 1960), pp. 1-2.

the absolute or tonal system approach has been a continuing controversy.

> I adhere throughout to the good old system of representing by Do, Re, Mi, etc., the scale of natural notes in any key whatever, taking Do for the keynote, whatever that may be, in opposition to the practice lately introduced of taking Do to represent one fixed tone, --the greatest retrograde step, in my opinion, ever taken in teaching music, or any other branch of knowledge.[1]

W. Otto Miessner expresses a different viewpoint:

> In the writer's opinion, it is this irreconcilable conflict between the oral use of a relative system with a fixed-pitch staff notation that lies at the trouble which most of us experience in teaching music reading.
>
> . . . As for the growth of the sense of tonality, the instrumentalist, trained to hear as well as to make motor responses, develops this feeling with greater assurance than the vocalist. The reason for the usually greater musicianship of the instrumentalist lies in the fact of his numerous coordinations of the visual, spatial, motor, and auditory perceptions he experiences in contact with the instruments he plays.[2]

Syllables, Numbers, Letters

> This begins with scale practice and study of all of the intervals within the octave. There is no objection to the use of the syllable names. They have their place and are useful in developing the key feeling (tonality), but they should not be used exclusively. The key names and pitch names should be

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[1]Grove, Dictionary of Music and Musicians, Vol. V, ed. H. C. Colles, 3rd ed. (New York: MacMillan Company, 1939), p. 358, citing John Herschel, "Musical Scales," Quarterly Journal of Science, Art (1868).

[2]W. Otto Miessner, "Tools for Tonal Thinking," Music Teachers National Association Proceedings, XXXII (1937), 229.

used at least as much. The pitch names of the lines and spaces of the staff do not change, but the syllables and key names are relative to a key tone.[1]

In the beginning (through Chapter 5, perhaps) the reader should refer to numbers derived from scale references or to sol-fa syllables as a means of reinforcing his sense of pitch relations to a tonic. Since both of these symbolic systems are crutches, however, and not germane to the reading of music, they should be discarded as soon as the reader has developed the ability to recall the pitch relations within any given pitch system. Thereafter, only neutral syllables (such as la) are recommended, except where reading difficulties might be surmounted most easily by reference to the symbolic names.[2]

For those, however, who by their natural musical gift and intelligence are eligible for any of the branches of musical activity, such a method will be the sound basis for their musical development. They will find in the present book all a musician needs as a preparation for higher theoretical and practical studies, offered without detours and evasions. The book does not use solmization syllables, since they are misleading. It avoids special names and fancy symbols, since they distract attention from the main object: the knowledge of all the basic conventions and facts of musical theory and their traditional representation in written form. This knowledge is presented through the most intensive kind of work: exercises.[3]

If you are impatient, don't read this book. If you are a musician whose attitude to sol-fa and other

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[1]D. A. Clippinger, Sight Singing Based on Rhythmic, Melodic, Harmonic Ear Training (Chicago: H. T. FitzSimons Company, 1931), p. 18.

[2]William Thompson, Introduction to Music Reading, Concepts, and Applications (Belmont: Wadsworth Publishing Company, Inc., 1966), p. viii.

[3]Paul Hindemith, Elementary Training for Musicians, (New York: Associated Music Publishers, Inc., 1949), p. x.

> 'childish' aids is one of disdain, don't read this book.[1]

The following chart shows the method of notational preference that the authors of singing books advocate (Figure 1, p. 77). Several have been published within the last ten years.

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[1]Arnold Bentley, Aural Foundations of Music Reading (London: Novello and Company, Ltd., 1966), p. 7.

Figure 1

Notational Preference[1]

Syllables	Neutral Syllable	Numbers	Letters	Non-Commital	Author
+					Bentley
+		+	+		Benward
				+	Berkowitz
+		+	+		Clippinger
	+				Cornell
+					Curwen
+	+	+	+		Fish-Lloyd
			+		Hindemith
+					Jaques-Dalcroze
			+		Jersild
+					Kodaly
+		+	+		Lieberman
	+				McGaughey
+		+	+		Nye
				+	Ottman
		+	+		Raebeck
+		+			Root
Beginners	1a in advanced	Beginners	+		Thompson
	+	+	+		Wedge
+					Wiseman

[1]A complete author-title entry is included in the Bibliography.

Tonality and the Study of Intervals

> The feeling of tonality is the basis of musical thinking. It means, in short, the feeling of key relation, the relation of all of the tones of a key to a keytone. The singer must think each tone as he sings it. If he can feel the place of each tone in the key before he sings it, he may hope to become an accurate sight reader. Otherwise, his reading will be mere guesswork. The pianist puts his finger on the proper key and the right tone follows, whether he thinks it or not; but the singer is mentally responsible for every tone he sings. If he sings a wrong pitch it is because he thinks a wrong pitch.[1]

> In sight singing, there is no need of thinking the name or size of the skip made as long as the key is known. It is only when this feeling of key has been broken down by unusual skips or a modulation that a knowledge of how to sing absolute or unrelated intervals is needed, and then only until the tonality has been re-established. The position of intervals on the staff and in the major scale, also of what chords they are a part, must be known so that they may be quickly recognized and sung.[2]

Buttram[3] investigated the influence of four selected factors on interval identification: 1) Interval Quale, 2) Pitch Distance, 3) Tonal Context, and 4) Relative Distinctiveness.

> The identification of intervals in two contextual situations also resulted in significant changes in both the number of correct responses and the number and type of incorrect responses. These variations in response indicated that intervals do not "possess" a

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[1]Clippinger, op. cit., p. 15.

[2]George A. Wedge, Advanced Ear Training and Sight Singing (New York: G. Schirmer, Inc., 1922), p. 9.

[3]Joseph Buttram, "The Influence of Certain Factors on Interval Identification" (unpublished Ph.D. dissertation, University of Kansas, 1967).

> distinctiveness of sufficient magnitude or stability to withstand alterations in order of difficulty when tested under different conditions.[1]

In a study involving twenty-four students at the University of California, Los Angeles, Jeffries[2] found that:

> Drilling the intervals in the random order of difficulty produced better learning results than drilling the intervals in order of increasing difficulty. This was particularly evident on the retension test when an analysis of variance showed that subjects trained with the ordered interval presentation scored significantly lower than subjects trained with the random presentation. The former averaged seventy-one per cent correct judgments, the latter, eighty-six per cent, differences in score being significant beyond the one per cent level of confidence.[3]

Marquis[4] found in his study that the ability to sing intervals depends on their melodic context.

> There is little consistency between ability to sing an interval in isolation and to sing it in melodic context. This is true of all levels of contextual complexity.
>
> This lack of consistency suggests that more is involved in melodic sight singing than to sing isolated intervals; . . . .[5]

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[1] Ibid., p. 141.

[2] Thomas Jeffries, "The Effects of Order of Presentation on the Oral Recognition of Melodic Intervals" (unpublished Ph.D. dissertation, University of California, Los Angeles, 1965).

[3] Ibid., pp. 190-191.

[4] James Henry Marquis, "A Study of Interval Problems in Sight Singing Performance with Consideration of the Effect of Context" (unpublished Ph.D. dissertation, University of Iowa, 1963).

[5] Ibid., p. 172.

Rhythm

Although instruction books often give special emphasis to rhythm in the study of sight singing, Boyle's[1] review of a study by Nagel[2] questions its value.

> The results of a recent study by Nagel do not support the view that an emphasis upon rhythm improves sight reading ability. Her study yielded no statistically significant differences between the achievement of a group of students whose method of instruction included a "special emphasis upon rhythm in music" and a group of students whose method of instruction placed "no more than ordinary emphasis upon rhythm." Actually, the control group made greater gains between pre-test and post-test than the experimental group. The method placing special emphasis upon rhythm included a variety of bodily movements, a system of mnemonics, and ensemble experience as aids in learning rhythm.[3]

Whole- and Part-Methods of Teaching

In a study of whole- and part-methods of teaching, with two groups of elementary education major students, Helbling[4] found that:

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[1]John David Boyle, "The Effect of Prescribed Rhythmical Movements on the Ability to Sight Read Music" (unpublished Ph.D. dissertation, University of Kansas, 1968).

[2]Christina I. Nagel, "A Comparison of Two Methods of Teaching Instrumental Music to Normal and Exceptional Children" (unpublished Master's Thesis, University of Kansas, Lawrence, 1965), p. 43.

[3]Boyle, op. cit., p. 42-43.

[4]Devon Willis Helbling, "An Experimental Study of the Relative Effectiveness of "Whole" and "Part" Methods of Teaching" (unpublished Ph.D. dissertation, Indiana University, 1965).

> the results of the experiment indicate that neither the Whole-Method Group nor the Part-Method Group excelled in significant progress in sight singing performance. However, the Part-Method Group made significantly more progress during the first-half of the training period, and the Whole-Method Group made significantly more progress during the last-half. The results of the experiment also indicate that no significant difference in progress was made by either group in rhythm development or pitch development for the sight singing course as a whole.[1]

Helbling defines the "whole" and "part" concepts of learning:

> The "whole" concept has as its basis the classic Gestalt notion that learning functions in relation to "whole" (organizational) characteristics . . . . As Wertheimer[2] expresses it, "The comprehension of whole-properties and whole-considerations must precede consideration of 'parts.'" The basis of a Gestalt "whole" learning experience is the discovery of organized relationships (a process) in organized wholes (the product of a process). In other words, in a Gestalt "whole" learning situation, the learning materials would be the product of a process and the learning procedures the process.[3]
>
> The "part" concept has as its basis the associationist notion that learning involves the establishing of bonds by the association of stimulus and response. According to this concept, learning is an additive process (an accumulation of specific connections) in which the learning materials would consist initially of parts not necessarily related to the organized whole of which they are parts, and the learning procedures would ordinarily involve merely the selecting of responses and connecting

---

[1] Ibid., p. 49.

[2] Max Wertheimer, "The General Theoretical Situation," Source Book of Gestalt Psychology, ed. W. D. Ellis (New York: Harcourt and Brace Company, 1938), p. 15.

[3] Helbling, op. cit., pp. 14-15.

> them to the proper stimulus rather than the initial comprehension of "whole" (organizational) characteristics of learning materials that are organized wholes in the Gestalt sense. Learning becomes an additive process through the addition of responses to the learner's repertoire.[1]

In his research, Helbling found the following music educators who were influenced by the "whole" concept of learning: James Mursell, Lilla Belle Pitts, Will Earhart, Howard Murphy, and Beatrice Perham Krone.[2]

In his book on Ear Training, Jersild[3] advocates the Gestalt approach to the study of sight singing:

> The purpose of this manual of ear training and sight reading is the theoretical instruction of the serious student receiving his training in conservatories, universities, music schools, etc. In a more simplified

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[1]Helbling, op. cit., p. 19.

[2]James L. Mursell, Psychology for Modern Education (New York: W. W. Norton and Company, Inc., 1952), pp. 149-150, 160-167; James L. Mursell, Using Your Mind Effectively (New York: McGraw-Hill Book Company, Inc., 1951), pp. 9-10, 31-36. James L. Mursell and Mabelle Glenn, The Psychology of School Music Teaching (New York: Silver Burdett Company, 1938), pp. 49, 146-157, 258-259; Howard A. Murphy, Teaching Musicianship (New York: Coleman-Ross Company, Inc., 1950), pp. 11-18, 144-145; Howard A. Murphy and Edwin Stringham, Creative Harmony and Musicianship (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1951), pp. v-xiii; Lilla Belle Pitts, The Music Curriculum in a Changing World (New York: Silver Burdett Company, 1944), pp. 33, 39, 43; Will Earhart, The Meaning and Teaching of Music (New York: M. Witmark and Sons, 1935), pp. 31, 63, 75, 79, 132-134; Beatrice Perham Krone, Music in the New School (Chicago: Neil A. Kjos Music Company, 1937), pp. 13, 22, 35-37.

[3]Jorgen Jersild, Ear Training, Basic Instruction in Melody and Rhythm Reading, trans. Gerd Schiotz (New York: G. Schirmer, Inc., 1966).

form, this method may also be used to teach less advanced students as well as by students who wish to teach themselves.

In principle, this is an attempt to approach the problems of music reading by learning to recognize at a glance entire musical patterns rather than laboriously going from detail to detail. Somewhat opposed to this view are the several music reading systems which begin with a more or less abstract study of intervals. These rarely provide efficient results. There are two reasons for this. First, the character of the interval changes according to its place in the tonal context. Second, the interval constitutes a subordinated detail in any musical sequence. While reading music, such "atomistic" detail will rarely be perceived. In an attempt to reach a concept superior to that of the interval, the principle of tonality results. This is the principle by which individual tones are coordinated into the general context of musical patterns and phrases.

The concept of tonality can be observed within widely differing styles. It appears in pentatonic primitive music, in monophonic and polyphonic styles of the Middle Ages and the Renaissance, and also in the free-tonal music of contemporary literature. However, the stabilizing order of the tonality is felt more decisively within the music of the eighteenth and nineteenth centuries, i.e., in the established major and minor styles. In these periods, the melodic patterns follow established rules and are, in addition, governed by the equally rigid traditional patterns of the chord sequences of functional harmony.

For these reasons, music of major and minor style is considered most appropriate for the initial study of melody reading. The melodic and harmonic patterns of this period are naturally familiar to any student and are, as such, valuable aids. When the student is able to visualize musical patterns as units, he is ready to expand his field of study to music of both earlier and more recent periods.

A music reading system which uses contemporary music as a starting point might well be imagined, but it would not be a system which at the same time utilizes well-known tone relations as the most appropriate basis for the initial study.

> In accordance with the findings of Gestalt psychology, the decisive motto for the preparation of this manual has been that of integration. A simple tonal pattern conceived as an integral unit forms the basis of such a procedure. From this basic pattern, new and more complex variations are developed. By comparison, these will prove much easier to grasp.
>
> A completely untrained person of average musical ability is able to sing an ascending major scale without difficulty. Though unconscious of the structural stepwise progression, he already possesses a pattern for the further development of this kind by isolating the individual components of the pattern. For example, when exploring various stepwise motions, it is inappropriate to analyze the whole- and half-steps in an effort to stress the single components of the sequence. On the other hand, if such structural diatonic patterns are considered as parts of an entire basic pattern, such as the scale, the method is correct.[1]

Ortmann[2] advocates separation of the elements in overcoming problems. He believes that rhythm lends itself best to isolation, and that the elimination of rhythm or meter is desirable in the study of pitch.

> In any study of purely melodic problems, the elimination of rhythm or meter is desirable. Otherwise, we may erroneously assign to melody what is actually contributed by rhythm. It is, perhaps, impossible to isolate melody completely: the last tone of any single tone succession will receive a subjective accent. (See Rhythmic Patterns.) However, by using tones of equal value and intensity, the rhythmic element is reduced to a minimum. The element of tonality likewise cannot be eliminated, so long as we use melodies sounding in any "key."[3]

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[1] Ibid., p. 5.

[2] Otto Ortmann, Problems in the Elements of Ear Dictation (Baltimore: Peabody Conservatory of Music, 1934).

[3] Ibid., p. 26.

Methods and Procedures of the Experiment

Methods

After reviewing many articles, dissertations and books, it must be concluded that there is not necessarily a particular method that is superior to another, but the effectiveness of its presentation is important in regards to the results that will be obtained. The "quality" of the students is also an important factor in the results of any experiment.

In deciding whether to use syllables, numbers, letters, or a combination of them, it might be preferable to use all of these techniques if an unlimited amount of time were available. Since the experiment involved only ten minutes each class-period (melodic dictation or sight singing - five minutes, familiar songs - five minutes), it seemed advisable to select only one of the techniques for all of the groups. In this manner, students could concentrate on one note-learning technique. In addition, the number of variables could be kept at a manageable level. The writer believes that the exclusive use of letters as the instructional technique provides a unifying factor for those groups involved in both sight singing and melodic dictation.

Exercises[1] and songs[2] were confined to those that are tonally oriented. In general, examples were within an octave range, of moderate speed, in 2/4, 3/4, 4/4, and 6/8 time signatures, and in note values ranging from whole- to eighth-notes. Whenever possible, the whole-method approach was used, i.e., drilling on entire exercises and songs rather than in segments, and without drilling separately on pitch and rhythm. The exception was in melodic dictation, in which exercises were vocally dictated in short segments of not more than four measures. Pitch and rhythm, however, were dictated together as a unit. All training procedure groups practiced exercises and songs in unharmonized settings.

Procedures

Four types of training were undertaken in sight singing and/or melodic dictation:

1. Sight Singing.
2. Melodic Dictation.
3. Sight Singing followed by Melodic Dictation.
4. Melodic Dictation followed by Sight Singing.

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[1]Sol Berkowitz, Gabriel Frontrier, and Leo Kraft, A New Approach to Sight Singing (New York: W. W. Norton & Company, Inc., 1960); Zoltan Kodaly, 333 Elementary Exercises (New York: Boosey & Hawkes, 1957).

[2]Lorrain E. Watters, Louis G. Wersen, William Hartshorn, L. Eileen McMillan, Alice Gallup, and Frederick Beckman, The Magic of Music, Book Three (Boston: Ginn and Company, 1966); James Mursell, Gladys Tipton, Beatrice Landeck, Harriet Nordholm, Roy E. Freeburg, and Jack M. Watson Music Around the World, Book Six (New York: Silver Burdett Company, 1956); Charles Hansen, comp., 101 Popular Songs, Library C (Miami Beach: Charles Hansen Publication, 1969).

All groups had one part of their training procedure in common throughout the entire experiment: familiar songs. The amount of sight singing and/or melodic dictation varied between the groups depending on the training procedure. Sight singing and melodic dictation were the experimental factors in the experiment.

Through the design of the experiment (Figure 2 - p. 88), results were obtained to determine:

1. the effects of the four types of training on music reading achievement.
2. if there is a significant relationship between scores in melodic dictation and sight singing.
3. if the sequence of the training procedure should begin with melodic dictation or sight singing.
4. if the sequence of the training procedure should begin with melodic dictation or sight singing for high or low achievers or the interaction of high and low achievers.

The KR_{21} formula was used to estimate the reliability of the tests in the experiment. The results were as follows:

	Pitch	Rhythm
1. Sight Singing Test I (O_1)	.89	.95
2. Sight Singing Test II (O_2)	.93	.92
3. Melodic Dictation Test I (D_1)	.85	.84
4. Melodic Dictation Test II (D_2)	.89	.93
5. Melodic Dictation Test III (D_3)	.87	.92

The validity of the tests was determined by the music faculty of State University College at Geneseo, New York.

Figure 2

Design of the Experiment

Training Procedure Groups	Five Weeks			Tests*		Five Weeks			Tests*	
	1	2	3	4	5	6	7	8	9	10
Fall Semester										
Group I	Sight Singing Familiar Songs				O_1	Melodic Dictation Familiar Songs		D_1	D_2	D_3-O_2
Group II	Melodic Dictation Familiar Songs		D_1	D_2	D_3-O_1	Sight Singing Familiar Songs				O_2
Group III	Sight Singing Familiar Songs				O_1	Sight Singing Familiar Songs				O_2
Spring Semester										
Group IV	Sight Singing Familiar Songs				O_1	Melodic Dictation Familiar Songs		D_1	D_2	D_3-O_2
Group V	Melodic Dictation Familiar Songs		D_1	D_2	D_3-O_1	Melodic Dictation Familiar Songs		D_4	D_5	D_6-O_2
Group VI	Sight Singing Familiar Songs				O_1	Sight Singing Familiar Songs				O_2

* O_1, O_2 - Sight Singing Tests D_1, D_2, D_3, D_4, D_5, D_6 - Melodic Dictation Tests

CHAPTER IV

THE EXPERIMENT

In order to determine the effects that melodic dictation and sight singing have on music reading achievement, a series of null hypotheses were tested. Results were obtained on the errors of the two sight singing tests (O_1 and O_2) and the three melodic dictation tests (D_1, D_2, and D_3). Acceptable levels of significance were established at the five per cent level of confidence.

Null Hypothesis I

> There is no difference in music reading achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures if musical background is nearly equal.

Null Hypothesis II

> There is no significant relationship between scores in melodic dictation and sight singing.

Null Hypothesis III

> There is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing.

Null Hypothesis IV

> There is no difference in music reading achievement whether the sequence of the training procedure begins

with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers.

A total of 189 non-music major students, who were enrolled in six classes of the course entitled Understanding Music at the State University College at Geneseo, New York were used for the study. Students enroll for this course on an elective basis, and there is no prerequisite. The students were not assigned to any group, as the composition of each group consisted entirely on whatever time-slot each student selected at registration; therefore, they were not placed in any group on the basis of special skills, musical background, or for any other reason. Only those students who could not match pitches were excluded in the results of the experiment (Figure 3, p. 91).

A three-week instructional program preceded the ten-week experiment. All essential instruction pertinent to the groups' training procedures in the experiment was covered, i.e., the knowledge of and response to music notation. Emphasis was placed on tempo, key and time signatures, pitch and rhythm notation, and phrasing.

Findings

Null Hypothesis I

An analysis of covariance[1] was used to compare the

[1]NYBMUL, Univariate and Multivariate Analysis of Variance and Covariance (Buffalo: Computer Center Press of the State University of New York at Buffalo (ver.-2), 1968).

Figure 3

Student Representation

Fall Semester, 1969

Group	Number of Students	Students Excluded for Pitch Problems
I	33	1
II	33	
III	32	1
	Spring Semester, 1970	
IV	28	
V	35	
VI	28	1
	189	

training procedures, using sight singing tests I and II as the criteria and a rating scale of musical background (0 to 9) as the covariate (Figure 4, p. 93).

The analysis (Tables 1-12, pp. 114-125) did not indicate a significant difference in music reading achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures. The F ratio would need to be 3.87 for O_1, 2.65 for O_2 and $O_1 + O_2$, and the highest F ratio in all of the tests was 1.40.

The covariate (musical background) was nearly equal in all groups (Tables 3-4, pp. 116-117, Tables 7-8, pp. 120-121, and Tables 11-12, pp. 124-125), and there was a high negative correlation well beyond the .001 level of confidence at .226 (high musical background - low errors, and low musical background - high errors). All groups showed a correlation of at least -.494:

	Pitch	Rhythm
Sight Singing Test I (O_1)	-.629	-.586
Sight Singing Test II (O_2)	-.535	-.494
Sight Singing Tests I and II ($O_1 + O_2$)	-.633	-.601

Null Hypothesis I is accepted.

Null Hypothesis II

Scores of the melodic dictation tests (D_1, D_2, D_3) and sight singing tests (O_1, O_2) were used to determine whether there is a relation between scores in melodic dictation and sight singing. The correlation (Tables 13-17,

Figure 4

Analysis of Covariance

Comparison of Training Procedure Groups in Music Reading Achievement

Five Week		Ten Week	
Sight Singing Test I (O_1)		Sight Singing Test II (O_2)	
Multivariate (1x2)		Multivariate (1x4)	
Training Procedure	Group	Training Procedure	Group
1. Sight Singing	I & IV III & VI	1. Melodic Dictation	I & IV
2. Melodic Dictation	II & V	2. Sight Singing	III & VI
		3. Sight Singing	II
		4. Melodic Dictation	V

Sight Singing Tests I and II Combined ($O_1 + O_2$)

Multivariate (1x4)

Training Procedure	Group
1. Sight Singing and Melodic Dictation	I & IV
2. Sight Singing and Sight Singing	III & VI
3. Melodic Dictation and Sight Singing	II
4. Melodic Dictation and Melodic Dictation	V

pp. 126-130) revealed that those groups involved in both melodic dictation and sight singing showed significant correlations ranging from sixty-two to one hundred per cent.

The three additional melodic dictation tests that Group V took (D_4, D_5, D_6) were not considered in the correlation; however, results on these tests revealed that Group V correlated at a higher level than on the three earlier tests (D_1, D_2, D_3), (Table 18, p. 131).

Null Hypothesis II is rejected.

Null Hypothesis III

A t test was used in analyzing those training procedure groups that were involved with both melodic dictation and sight singing in order to determine if there is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing. The groups with the following sequences of instruction were chosen:

	Five Weeks	Five Weeks
Group I-IV (Combined)	Sight Singing	Melodic Dictation
Group II	Melodic Dictation	Sight Singing

The Five Week Sight Singing Test I (O_1) pitch and rhythm scores of Group II were compared with the Ten Week Sight Singing Test II (O_2) pitch and rhythm scores of Group I-IV.

Results of the t test (Tables 19-20, pp. 132-133) indicated that there is no significant difference whether

melodic dictation or sight singing begins the training procedure.

In order to be significant, t would need to be 1.96. In the analysis of the tests, t = .26 on pitch and .38 on rhythm.

Null Hypothesis III is accepted.

Null Hypothesis IV

The analysis of variance technique was used to compare results on the two sight singing tests (O_1, O_2) in order to determine if there is no difference whether the sequence of the training procedure begins with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers.

The six highest and six lowest achievers in combined pitch and rhythm scores on Sight Singing Test I (O_1) were selected from Group I-IV (Combined) and Group II and compared in the following design:

	Five Weeks	Five Weeks
Group I-IV (Combined)	Sight Singing	Melodic Dictation
Group II	Melodic Dictation	Sight Singing

In reference to Tables 21-22 (pp. 134-135), an explanation of the groups' analyses under Source is as follows:

A. The high and low achievers of the two groups: A^1 (I-IV combined) vs. A^2 - II, were compared in order to determine if there was a superior training procedure group of high and low achievers.

B. To verify if the high achievers (B^2) of the two groups (A^1, A^2) significantly achieved at a higher

level than the low achievers (B^1) of the two groups (A^1, A^2). They did; however, they were selected for that reason.

A x B. To determine if one type of achiever (high or low) profited more from one than another different training procedure.

Results of the analysis indicated that there is no significant difference whether the sequence of the training procedure begins with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers. In order to be significant, the F ratio would need to be 4.35.

Null Hypothesis IV is accepted.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

The value in the ability to sight read was stressed in the following areas: group activities and the professional performance field. Sight reading ability is not an end in itself, but it provides opportunities for greater success in the above areas.

Since the beginning of the nineteenth century, melodic dictation was used as an aid to sight singing. Eventually, dictation gained recognition for strengthening aural perception in the development of musicianship.

The purpose of the study was to determine the effects that melodic dictation and sight singing have on music reading achievement. The sequence of instruction was also investigated by a variety of training procedures. Melodic dictation and sight singing were the experimental factors and were investigated over a ten-week period with the following design:

Group	Five Weeks	O_1	Five Weeks	O_2
I & IV	Sight Singing		Melodic Dictation	
III & VI	Sight Singing		Sight Singing	
II	Melodic Dictation		Sight Singing	
V	Melodic Dictation		Melodic Dictation	

All groups used the same instructional materials depending on their respective training procedures, i.e., tonally oriented sight singing and/or melodic dictation exercises and familiar songs in folk and popular styles. The whole-method approach was used throughout the experiment. The error scores of two sight singing tests (O_1, O_2) were used as the criterion instrument, and melodic dictation tests were given to those groups involved with melodic dictation in their training procedures. In addition, the students answered a music questionnaire concerning musical background.

Related Literature

A review of textbooks in sight singing and/or melodic dictation revealed that there was no common training method; in fact, there was a wide variety of methods which were usually based on the authors' personal beliefs rather than scientific investigations. Depending on the author, one or more of the following devices were used in singing melodies: syllables, neutral syllable, numbers, and letters, with syllables being used more often than the others.

A review of studies revealed the following:

Sight Singing and Melodic Dictation

Carlsen: There was no significant difference on criterion scores in sight singing between the five training

procedure groups.

Davis: Although all groups improved, experimental groups involved with melodic dictation as well as music reading achieved higher sight singing scores.

Mosher: A battery of tests designed to relate the influences on sight singing ability revealed that dictation of tonal patterns and melodies correlated higher than recognition of tonal patterns and figures and factual knowledge of scales, chords, measure and note values, and musical symbols.

Ritchie: In a series of correlations that the investigator developed between his test (the effects of diatonic harmony on the aural perception of melodic fragments) and grade scores in sight singing and harmonic dictation, the correlations were significant past the one per cent level of confidence.

Sight Singing

Programmed Learning

Kanable: Although both Teacher-Classroom and Programmed learning groups made significant progress from pre- to post-test, there was no significant difference between the groups; however, the study indicated that it was possible to have effective programmed learning in sight singing.

Smith: Testing the effectiveness of Kanable's programmed method in sight singing, the investigator found that no improvement had taken place regardless of the training method: 1) Programmed Learning, 2) Teacher-Classroom, and 3) No Training.

Other Training Procedures

Bolden: In investigating the extent of influence, if any, of piano, syllables/letters, and recorder on growth in sight singing and rhythmic reading, it was found that the syllables/letters group had the highest total gain at the one-half per cent level of confidence and the highest gain in sight singing, although not significant at the five per cent level.

Marquis: Results of the study indicated that the difficulty of singing intervals varies widely according to the musical context in contrast to that of isolated intervals.

Tachistoscopic Drill in Sight Singing

Ray and Stokes found no significant difference between conventional and tachistoscopic methods, whereas Hammer and Barnes found significant differences in favor of tachistoscopic training.

Melodic Dictation

Lidral: In a study designed to test the effective

value of giving extra individual and class help in students' weak areas of melodic dictation, the experimental groups showed more improvement than the control group without extra help.

Langford: The amount of time spent in practicing melodic dictation (ten, twenty, or forty hours) showed no significant difference between the groups' improvement.

Tests and Measures

In predicting success in sight singing, some findings are as follows:

1. Salisbury and Smith found that the Pitch and Tonal Memory portions of the Seashore tests correlated well with the sight singing criterion.
2. Chadwick found a high correlation between sight singing and the Seashore tests, but not with intelligence.
3. Hollingsworth found a low correlation between the Seashore tests and sight singing.
4. Zimmerman and Bolden found that musical background can be a factor influencing sight singing ability.
5. Wakeland found that the Drake Musical Aptitude Test and Brown-Carlsen Listening Comprehension Test were not good predictors of success in sight singing.
6. Klemish found that socio-economic influences could be a factor in sight singing achievement.

The Experiment

In order to determine the effects that melodic

dictation and sight singing have on music reading achievement, a series of null hypotheses were examined with results obtained on the criterion instrument (errors on the two sight singing tests - O_1 and O_2) and the errors on three melodic dictation tests - D_1, D_2, and D_3.

Null Hypothesis I

> There is no difference in music reading achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures if musical background is nearly equal.

Null Hypothesis II

> There is no significant relationship between scores in melodic dictation and sight singing.

Null Hypothesis III

> There is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing.

Null Hypothesis IV

> There is no difference in music reading achievement whether the sequence of the training procedure begins with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers.

A total of 189 non-music major students, who were enrolled in six classes of the course entitled Understanding Music at the State University College at Geneseo, New York, were used for the study. Prior to the ten-week experiment, a three-week instructional program pertinent to the groups' training procedures was given, i.e., tempo, key and time signatures, pitch and rhythm notation, and phrasing.

Findings

Null Hypothesis I

An analysis of covariance was used to compare the training procedures, using sight singing tests I and II as the criteria and a rating scale of musical background as the covariate.

The analysis did not indicate a significant difference in sight singing achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures. In addition, musical background was nearly equal in all groups, and there was a high negative correlation well beyond the .001 level of confidence (high musical background - low errors, and low musical background - high errors); therefore, Null Hypothesis I was accepted.

Null Hypothesis II

Scores of the melodic dictation tests and sight singing criteria (O_1, O_2) were used to determine whether there is a relationship between scores in melodic dictation and sight singing. The correlation matrix revealed that correlations were high at the five per cent level of confidence; therefore, Null Hypothesis II was rejected.

Null Hypothesis III

A t test was used in analyzing those training

procedure groups that were involved in both melodic dictation and sight singing in order to determine if there is no difference whether the sequence of the training procedure begins with melodic dictation or sight singing. Results of the test indicated that there was no significant difference; therefore, Null Hypothesis III was accepted.

Null Hypothesis IV

The analysis of variance technique was used to compare the results on the sight singing criteria (O_1, O_2) in order to determine if there is no difference whether the sequence of the training procedure begins with melodic dictation or sight singing with either high or low achievers or the interaction of high and low achievers. Results indicated that there was no difference with either high or low achievers, or the interaction of high and low achievers; therefore, Null Hypothesis IV was accepted.

Conclusions

Results of the experiment indicated that:

1. there is no difference in music reading achievement whether melodic dictation, sight singing, or a combination of melodic dictation and sight singing are used as the training procedures if musical background is nearly equal.
2. there is a relationship between scores in melodic dictation and sight singing.
3. there is no difference whether melodic dictation or sight singing begins the training procedure.

4. there is no difference whether melodic dictation or sight singing begins the training procedure with either high or low achievers or the interaction of high and low achievers.

It may be concluded that the extent of musical background is an important factor in determining music reading achievement. High negative correlations of the subjects were evident in all training procedures, i.e., high musical background - low errors; low musical background - high errors. In addition, the sequence of instruction (melodic dictation or sight singing first) had no significant influence on music reading achievement.

Recommendations

Experiments should be undertaken to determine if:

1. an increased amount of training would produce different results by devoting each class-period for at least one semester exclusively to the training procedures of this experiment.
2. results would be different if students were placed in groups with similar musical background.
3. the training procedures in this experiment would produce similar results with music-major students.
4. the training procedures in this experiment would produce similar results at a younger age level, i.e., upper-elementary, junior and senior high school.

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APPENDICES

APPENDIX A

LIST OF THE TABLES

Table 1

Analysis of Covariance of Training Procedure Groups on Pitch in Music Reading Achievement

Five Week Sight Singing Test I (O_1)

Source	SS	df	MS	F	p
Between Groups*	16.04	1	16.04	.06	n.s.
Within Groups	49723.38	186	267.33		
Total	49739.42				

*1. Sight Singing - Groups I & IV, III & VI
2. Melodic Dictation - Groups II & V

Table 2

Analysis of Covariance of Training Procedure Groups on Rhythm in Music Reading Achievement

Five Week Sight Singing Test I (O_1)

Source	SS	df	MS	F	p
Between Groups*	43.65	1	43.65	.22	n.s.
Within Groups	36902.40	186	198.40		
Total	36946.05				

*1. Sight Singing - Groups I & IV, III & VI
2. Melodic Dictation - Groups II & V

Table 3

Comparison of Training Procedure Groups between Pitch in Music Reading Achievement and Musical Background

Five Week Sight Singing Test I (O_1)

Source	M	Musical Background	SD	Musical Background
Training Procedure Groups				
1. Sight Singing Groups I & IV, III & VI	21.35	4.80	20.90	3.57
2. Melodic Dictation Groups II & V	20.47	5.22	20.37	3.61

Table 4

Comparison of Training Procedure Groups between Rhythm in Music Reading Achievement and Musical Background

Five Week Sight Singing Test I (O_1)

Source	M	Musical Background	SD	Musical Background
Training Procedure Groups				
1. Sight Singing Groups I & IV, III & VI	17.68	4.80	16.93	3.57
2. Melodic Dictation Groups II & V	17.52	5.22	17.89	3.61

Table 5

Analysis of Covariance of Training Procedure Groups on Pitch in Music Reading Achievement

Ten Week Sight Singing Test II (O_2)

Source	SS	df	MS	F	p
Between Groups*	739.50	3	246.50	1.40	n.s.
Within Groups	32749.02	186	176.07		
Total	33488.52				

* 1. Melodic Dictation - Groups I & IV
2. Sight Singing - Groups III & VI
3. Sight Singing - Group II
4. Melodic Dictation - Group V

Table 6

Analysis of Covariance of Training Procedure Groups on Rhythm in Music Reading Achievement

Ten Week Sight Singing Test II (O_2)

Source	SS	df	MS	F	p
Between Groups*	63.21	3	21.07	.14	n.s.
Within Groups	27993.00	186	150.50		
Total	28056.21				

* 1. Melodic Dictation - Groups I & IV
2. Sight Singing - Groups III & VI
3. Sight Singing - Group II
4. Melodic Dictation - Group V

Table 7

Comparison of Training Procedure Groups between Pitch in Music Reading Achievement and Musical Background

Ten Week Sight Singing Test II (O_2)

Source	M	Musical Background	SD	Musical Background
Training Procedure Groups				
1. Melodic Dictation Groups I & IV	18.80	4.54	15.35	3.49
2. Sight Singing Groups III & VI	18.71	5.08	16.36	3.66
3. Sight Singing Group II	21.42	5.75	17.47	3.65
4. Melodic Dictation Group V	18.22	4.71	12.64	3.56

Table 8

Comparison of Training Procedure Groups between Rhythm in Music Reading Achievement and Musical Background

Ten Week Sight Singing Test II (O_2)

Source	M	Musical Background	SD	Musical Background
Training Procedure Groups				
1. Melodic Dictation Groups I & IV	19.29	4.54	14.11	3.49
2. Sight Singing Groups III & VI	17.11	5.08	13.94	3.66
3. Sight Singing Group II	15.84	5.75	15.73	3.65
4. Melodic Dictation Group V	19.02	4.71	10.96	3.56

Table 9

Analysis of Covariance of
Training Procedure Groups on Pitch in
Music Reading Achievement

Five and Ten Week Sight Singing Tests I and II (O_1+O_2) Combined

Source	SS	df	MS	F	p
Between Groups*	600.69	3	200.23	.29	n.s.
Within Groups	381026.56	184	2071.34		
Total	381627.25				

* 1. Sight Singing and Melodic Dictation - Groups I & IV
2. Sight Singing and Sight Singing - Groups III & VI
3. Melodic Dictation and Sight Singing - Group II
4. Melodic Dictation and Melodic Dictation - Group V

Table 10

Analysis of Covariance of
Training Procedure Groups on Rhythm in
Music Reading Achievement

Five and Ten Week Sight Singing Tests I and II (O_1+O_2) Combined

Source	SS	df	MS	F	p
Between Groups*	705.51	3	235.17	.45	n.s.
Within Groups	95148.40	184	522.60		
Total	95853.91				

* 1. Sight Singing and Melodic Dictation - Groups I & IV
2. Sight Singing and Sight Singing - Groups III & VI
3. Melodic Dictation and Sight Singing - Group II
4. Melodic Dictation and Melodic Dictation - Group V

Table 11

Comparison of Training Procedure Groups between Pitch in Music Reading Achievement and Musical Background

Five and Ten Week Sight Singing Tests I and II (O_1+O_2) Combined

Source	M	Musical Background	SD	Musical Background
Training Procedure Groups				
1. Sight Singing and Melodic Dictation Groups I & IV	41.35	4.54	35.67	3.49
2. Sight Singing and Sight Singing Groups III & VI	38.65	5.08	33.83	3.66
3. Melodic Dictation and Sight Singing Group II	39.27	5.75	35.58	3.65
4. Melodic Dictation and Melodic Dictation Group V	41.17	4.71	27.47	3.56

Table 12

Comparison of Training Procedure Groups between Rhythm in Music Reading Achievement and Musical Background

Five and Ten Week Sight Singing Tests I and II (O_1+O_2) Combined

	Source	M	Musical Background	SD	Musical Background
	Training Procedure Groups				
1.	Sight Singing and Melodic Dictation Groups I & IV	39.60	4.54	31.09	3.49
2.	Sight Singing and Sight Singing Groups III & VI	32.68	5.08	25.35	3.66
3.	Melodic Dictation and Sight Singing Group II	33.75	5.75	32.52	3.65
4.	Melodic Dictation and Melodic Dictation Group V	36.20	4.71	24.52	3.56

Table 13

Correlation between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests I, II, and III (D_1, D_2, D_3)

Group	5% Level	Number of Students	Percentage of Significant Correlations
I	.296	33	87
II	.296	33	100
IV	.323	28	100
V	.288	35	62

Table 14

Correlation Matrix of Group I on Pitch and Rhythm between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests I, II, and III (D_1, D_2, D_3)

		O_1		O_2		D_1		D_2		D_3	
		P	R	P	R	P	R	P	R	P	R
O_1	P	1.000	.859	.818	.661	.609	.527	.736	.565	.711	.674
	R	.859	1.000	.743	.802	.548	.554	.643	.653	.658	.699
O_2	P	.818	.743	1.000	.831	.481	.243	.643	.539	.584	.606
	R	.661	.802	.831	1.000	.285	.226	.417	.523	.567	.641

P = Pitch R = Rhythm

Significant at .296 - $p < .05$

Table 15

Correlation Matrix of Group II on Pitch and Rhythm between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests I, II, and III (D_1, D_2, D_3)

		O_1		O_2		D_1		D_2		D_3	
		P	R	P	R	P	R	P	R	P	R
O_1	P	1.000	.963	.681	.723	.550	.596	.572	.516	.698	.565
	R	.963	1.000	.638	.670	.490	.573	.568	.510	.680	.548
O_2	P	.681	.638	1.000	.808	.704	.533	.579	.691	.743	.637
	R	.723	.670	.808	1.000	.764	.549	.602	.689	.715	.638

P = Pitch R= Rhythm

Significant at .296 - $p < .05$

Table 16

Correlation Matrix of Group IV on Pitch and Rhythm between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests I, II, and III (D_1, D_2, D_3)

		O_1 P	O_1 R	O_2 P	O_2 R	D_1 P	D_1 R	D_2 P	D_2 R	D_3 P	D_3 R
O_1	P	1.000	.861	.671	.507	.816	.540	.779	.635	.672	.754
	R	.861	1.000	.534	.575	.671	.416	.684	.654	.629	.775
O_2	P	.671	.534	1.000	.478	.704	.414	.654	.527	.642	.444
	R	.507	.575	.478	1.000	.337	.552	.433	.407	.435	.510

P = Pitch R = Rhythm

Significant at .323 - $p < .05$

Table 17

Correlation Matrix of Group V on Pitch and Rhythm between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests I, II, and III (D_1, D_2, D_3)

		O_1		O_2		D_1		D_2		D_3	
		P	R	P	R	P	R	P	R	P	R
O_1	P	1.000	.780	.441	.585	.508	.377	.602	.267	.590	.666
	R	.780	1.000	.434	.619	.525	.383	.502	.227	.667	.695
O_2	P	.441	.434	1.000	.664	.203	.200	.198	-.057	.338	.269
	R	.585	.619	.664	1.000	.412	.286	.585	.221	.603	.640

P = Pitch R = Rhythm

Significant at .288 - $p < .05$

Table 18

Correlation Matrix of Group V on Pitch and Rhythm between Melodic Dictation and Sight Singing

Sight Singing Tests I and II (O_1, O_2) Dictation Tests IV, V, and VI (D_4, D_5, D_6)

		O_1		O_2		D_4		D_5		D_6	
		P	R	P	R	P	R	P	R	P	R
O_1	P	1.000	.780	.441	.585	.593	.430	.536	.466	.718	.609
	R	.780	1.000	.434	.619	.564	.374	.500	.393	.546	.599
O_2	P	.441	.434	1.000	.664	.376	.346	.390	.372	.505	.376
	R	.585	.619	.664	1.000	.658	.700	.424	.540	.685	.569

P = Pitch R = Rhythm

Significant at .288 - $p < .05$

Table 19

t Test Comparing Training Procedure Groups on Pitch with Instructional Sequence

Group I-IV: Ten Week Sight Singing Test II (O_2)
Group II: Five Week Sight Singing Test I (O_1)

Source	N	M	SD	t	p
Training Procedure Groups					
Sight Singing and Melodic Dictation Group I-IV	61	18.80	15.45	.26	n.s.
Melodic Dictation and Sight Singing Group II	33	17.84	21.30		

Table 20

t Test Comparing Training Procedure Groups on Rhythm with Instructional Sequence

Group I-IV: Ten Week Sight Singing Test II (O_2)
Group II: Five Week Sight Singing Test I (O_1)

Source	N	M	SD	t	p
Training Procedure Groups					
Sight Singing and Melodic Dictation Group I-IV	61	19.30	14.03	.38	n.s.
Melodic Dictation and Sight Singing Group II	33	17.90	19.81		

Table 21

Analysis of Variance

Comparison of High and Low Achievers on
Combined Pitch and Rhythm Scores
in Music Reading Achievement

Five Week Sight Singing Test I (O_1)

Source*	SS	df	MS	F	p
A	135.37	1	135.37	1.45	ns
B	72051.03	1	72051.03	769.69	$<.05$
A x B	100.06	1	100.06	1.07	ns
error	1872.16	20	93.61		
Total	74158.62	23			

*Comparison - A: Groups I-IV vs. II; B: High vs. Low Achievers

Table 22

Analysis of Variance

Comparison of High and Low Achievers on
Combined Pitch and Rhythm Scores
in Music Reading Achievement

Ten Week Sight Singing Test II (O_2)

Source*	SS	df	MS	F	p
A	48.16	1	48.16	.11	ns
B	23063.99	1	23063.99	51.54	$<.05$
A x B	170.69	1	170.69	.38	ns
error	8949.99	20	447.50		
Total	32232.83	23			

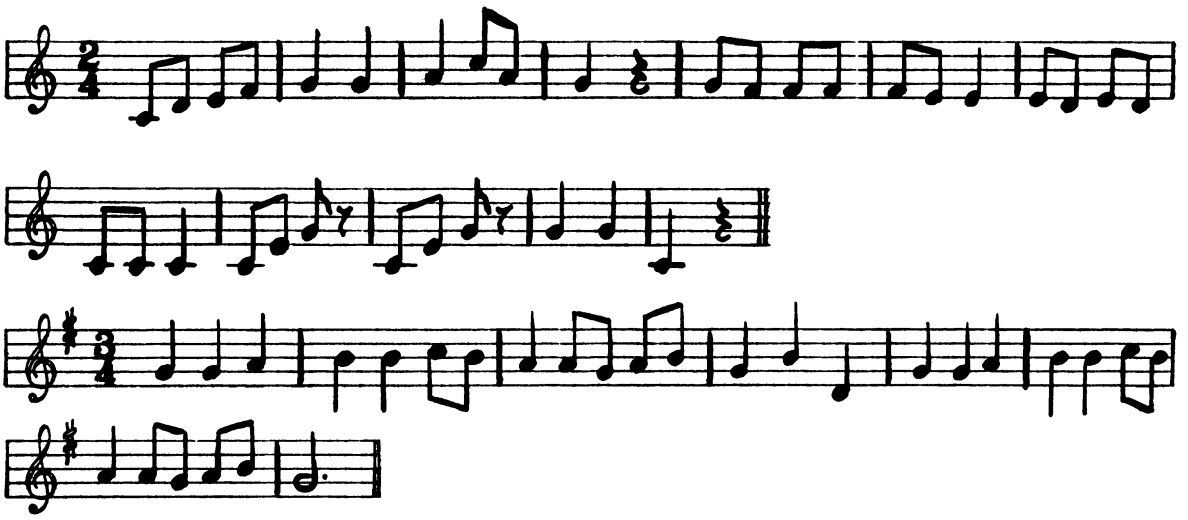
*Comparison - A: Groups I-IV vs. II; B: High vs. Low Achievers

APPENDIX B

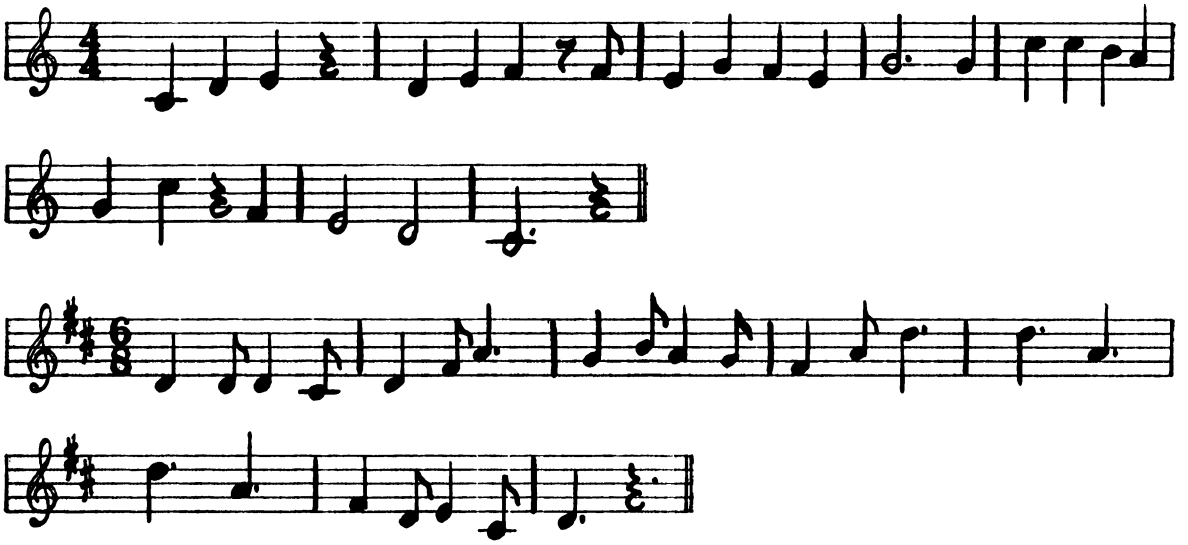
TESTS OF THE EXPERIMENT

TESTS OF THE EXPERIMENT

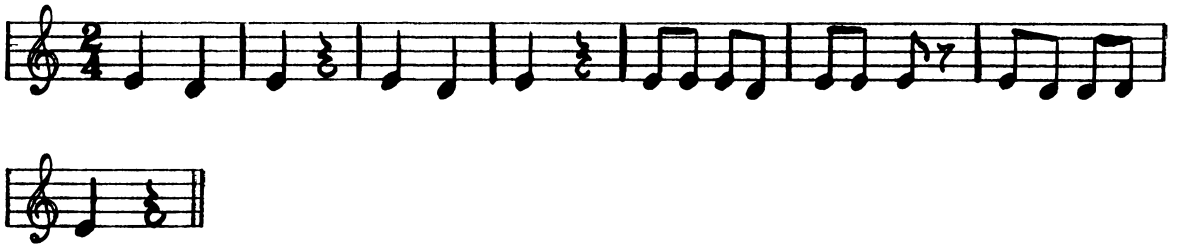
Five Week Sight Singing Test I (O_1)



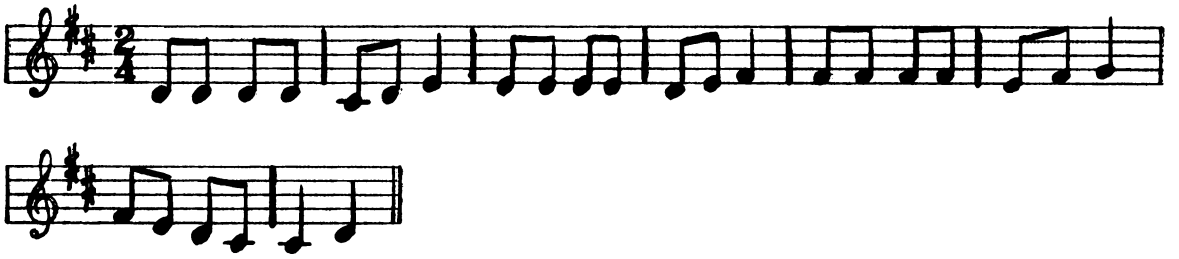
Ten Week Sight Singing Test II (O_2)



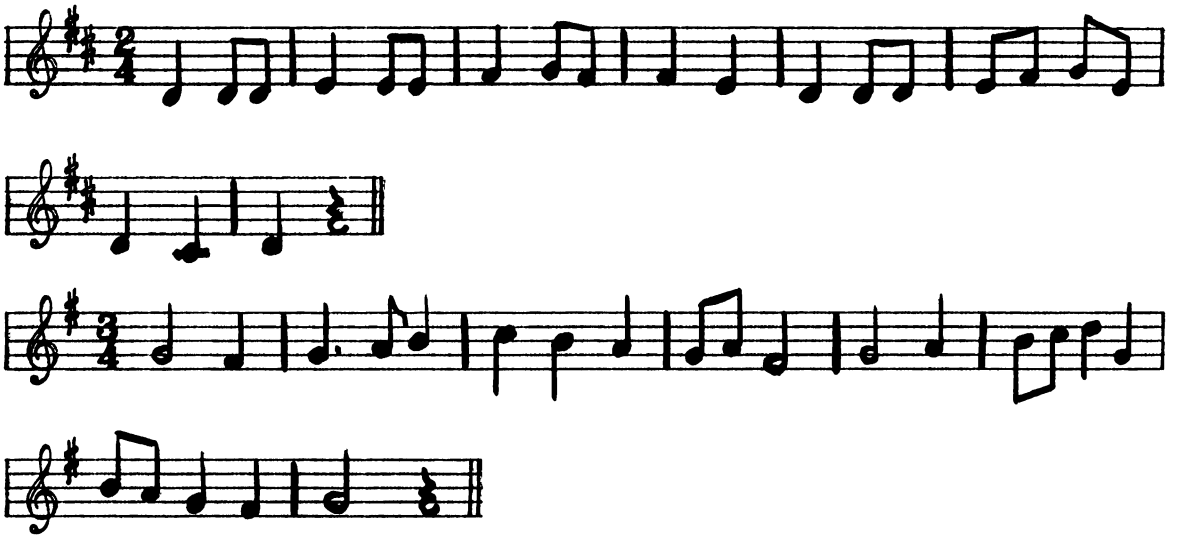
Dictation Test I (D_1)



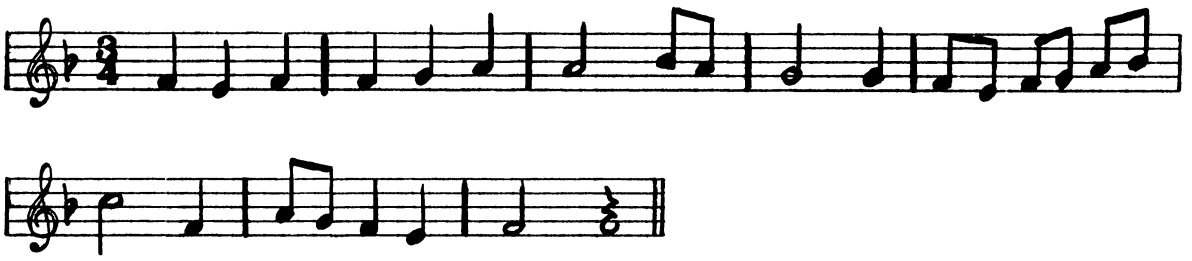
Dictation Test II (D_2)



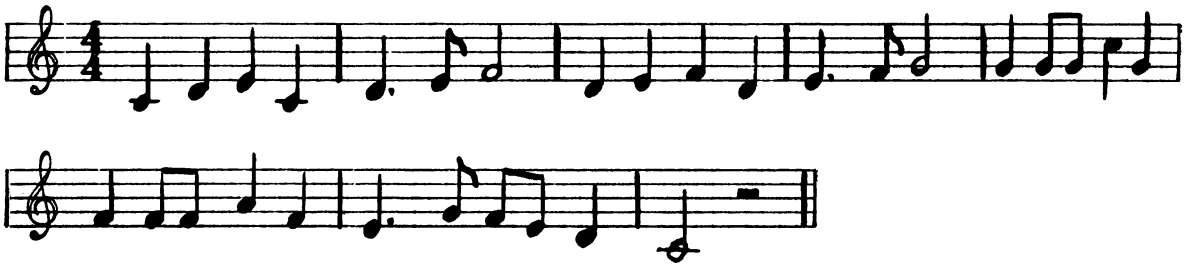
Dictation Test III (D_3)



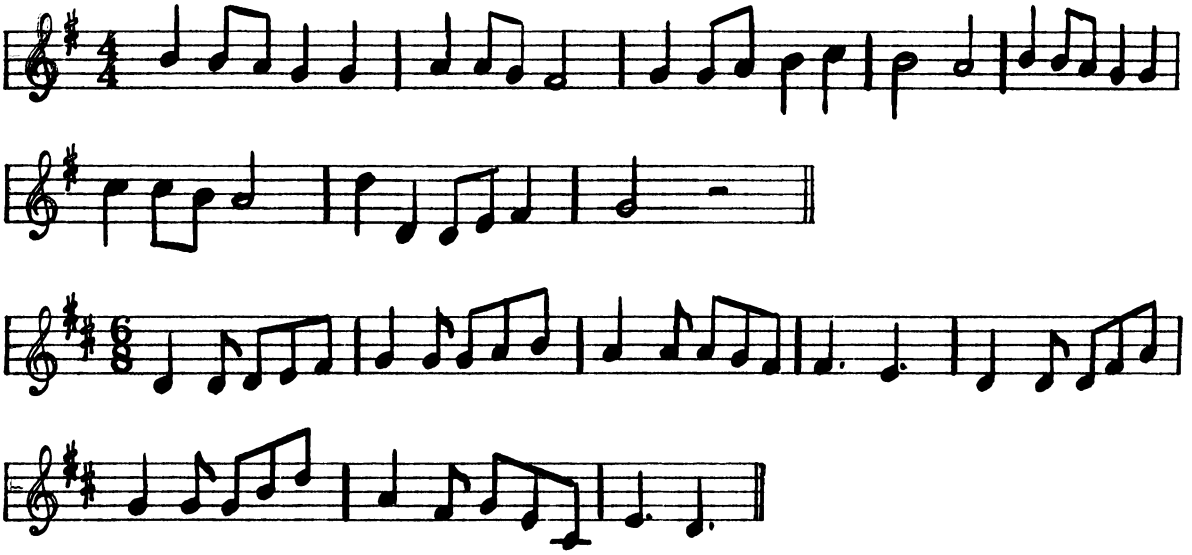
Dictation Test IV (D_4)



Dictation Test V (D_5)



Dictation Test VI (D_6)



APPENDIX C

MUSIC QUESTIONNAIRE OF MUSICAL BACKGROUND

MUSIC QUESTIONNAIRE OF MUSICAL BACKGROUND

1969-70

Name _____
last first middle

Home Address _____
street town state zip code

1) Encircle the grades in which you participated (half year or more) in the following: (Do not include any non-musical participation, e.g., twirling)

	Elementary						Jr. H.			Sr. H.			College			
Girls Glee Club	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Boys Glee Club	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mixed Chorus	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Small Voice Ensemble	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Band	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Orchestra	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Dance Orchestra	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Small Instrumental Ensembles	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

2) Encircle the number of years that you have studied piano (or organ):

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 over 15 ( )

3) Are you interested in accompanying? _____

4) Check the voice part that you usually sing:

1st Sop. ____	Tenor ____
2nd Sop. ____	Baritone ____
1st Alto ____	Bass ____
2nd Alto ____	

5) Have you ever sung solos? ____ Taken voice lessons? ____ How long? ____ Have you ever played solos? ____ Taken instrument lessons? ____ How long? ____

6) What band or orchestra instrument do you play? _____

Encircle the number of years that you have studied the instrument:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 over 15 ( )

7) Do you own your own instrument? _____

8) Encircle the number of years that you have studied any other instrument <u>not</u> <u>accounted</u> <u>for</u> in any of the above:

_____
(name of instrument)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 over 15 ( )

9) Encircle the number of years that you have participated regularly in a church choir or other community musical group:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 over 15 ( )

At what age? _____

Use the remainder of this sheet to add any further information in which you think we might be interested.

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