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MUSIC READING ABILITY OF BEGINNING WIND INSTRUMENTALISTS AFTER MELODIC INSTRUCTION

Carol B. MacKnight

Teaching techniques and materials that would treat music reading as a process and emphasize the structure of the melodic line were researched, developed, and then tested with 90 fourth grade students, each studying a wind instrument of his/her choice for a year. Control and experimental groups were set up with the groups and their teachers statistically equated. The only variation in treatment of the two groups was in the method of introducing pitches. The experimental group was introduced to pitch through a series of tonal patterns, while the control group learned a new pitch by letter name, fingering, and sound.

The study showed that tonal pattern instruction is superior to note identification teaching techniques in development of both sight reading skills and auditory-visual discrimination skills. The experimental treatment was particularly effective with students of low musical ability as measured by the Watkins-Farnum Performance Scale, a test of instrumental sight reading.

Key Words: audiovisual ability, brass-wind instruments, elementary education student, instrumental music students, music reading, statistical analysis teaching method.

In reading music, the instrumentalist must not only recognize the three types of notational symbols (for pitch, time, and expression) but must simultaneously perform them as well. The types of notation must be set in relation to one another and, in conjunction with other musical elements, must be perceived as parts of melodic and rhythmic sequences organized as phrases within a larger formal scheme. The process through which the beginning reader achieves this state is known only in a very general way.

Petzold describes the reading process as dependent upon three perceptual levels: (1) the auditory perception of musical sounds; (2) the visual perception of musical symbols; and (3) the integrative,

internalized process through which the individual organizes previous auditory and visual perceptions of given stimuli in order to react to these same, or similar, stimuli as they appear in new learning situations.[1] Reflecting similar thinking, Mursell regards the reading process as contingent upon "the establishment of working connections between the ear, eye and understanding."[2] Murphy emphatically warns that neither sense should be developed without the other.[3] Clearly, with an average visual grasp of only three to five notes, the reader, in achieving the composer's intent, must be capable of making musical sense from a relatively small group of notes.

According to Leonard and House, skill in reading music is determined by: "awareness of tonal and rhythmic movement in music and the development of concepts of tonality, of the tendencies of chords and tones, of the meaning of the notational symbols, and the relationship between the symbols and the sounds they represent."[4] The research of Lannert and Ullman lends support to this thesis.[5] Investigating factors in the reading of piano music, they found that better readers grasped the whole pattern at a glance while poor readers read note-by-note. Good readers were those who could anticipate the notes intended by the composer. The most general implication for the teaching of music reading that emerges from their study is that focusing upon note-by-note identification may impede the reader's ability to organize tones and rhythms into meaningful patterns even after note-identification skill is mastered.

Although instrumental teachers would not dispute the importance of learning to group notes, they very often teach music reading note-by-note. A new note is presented and learned as an isolated pitch whose meaning is that of a letter name, fingering, and lastly a sound. The danger in this approach lies in encouraging the reader to concentrate on individual notes, thereby shortening his span of vision, slowing his pace, and restricting his ability to think musically. In an effort to correct the problem, the teacher frequently advises the student to "read ahead." Possessing a larger span of vision, however, does not imply cognition; nor does the ability to react to single pitches necessarily provide the reader with the musical insight required to understand the meaning of a tone within a phrase, or prepare him for a change of meaning in other musical contexts.

The inadequacies of music reading instruction are demonstrated by

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[1] R. G. Petzold, "The Perception of Music Symbols in Music Reading by Normal Children and by Children Gifted Musically," *Journal of Experimental Education,* Vol. 28 (1960), p. 271.

[2] J. L. Mursell, *Music Education Principles and Programs* (New York: Silver Burdett Company, 1956), p. 141.

[3] H. A. Murphy, *Teaching Musicianship* (New York: Coleman-Ross Company, Inc., 1950), pp. 43–59.

[4] C. Leonard and R. House, *Foundations and Principles of Music Education* (New York: McGraw-Hill, 1959), p. 120.

[5] V. Lannert and M. Ullman, "Factors in the Reading of Piano Music," *American Journal of Psychology,* Vol. 43 (1945), pp. 91–99.

the failure of researchers to find instrumental training to be a factor influencing ability to read music. In a study by Colwell, the lack of achievement among high school instrumentalists, even after an additional year of instruction, was attributed to a rote learning experience that excluded continued emphasis on reading skill.[6] For the same reason, Petzold concluded that instrumental training might be more effective "if greater emphasis were given to the meaning of musical notation rather than to mere mechanical responses to a visual symbol."[7]

In order to read tones effectively, the reader must recall an aural referent from what he sees in notational form. Possession of aural-visual skill is an indication of the reader's ability to organize and conceptualize melodic sounds. Achievement in this area is dependent upon the meaning attached to the musical symbols. It has been established that melodic sound is given meaning through a sense of tonality, that is, being aware of the resting tone and mode. The most common device for emphasizing tendential effects is the application of the tonic sol-fa system. Its value lies in its clarification of tonality and its transferability to different tonal settings. Thus, melodic readings may be approached through a study of tonality, utilizing the tonic sol-fa system and emphasizing the perception of melody as combinations of sound.

The major objective of this investigation[8] was to research and develop teaching techniques and materials that would treat music reading as a process and emphasize the structure of the melodic line. The major problem under consideration was whether students who are taught a series of tonal patterns as single units attain a significantly higher level of musical achievement than students who are trained in note identification skill using traditional materials. Answers to the following questions were sought:

1. Is there any difference between the scores of the experimental and the control groups on the *Watkins-Farnum Performance Scale*[9] (WFPS)?
2. Is there any difference between the scores of the experimental and the control groups for either brass or woodwind instruments on the WFPS?
3. Is there any difference between the scores of the experimental and the control groups for either high or low musical aptitude on the WFPS?

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[6] R. J. Colwell, "An Investigation of Musical Achievement Among Vocal Students, Vocal-Instrumental Students, and Instrumental Students," *Journal of Research in Music Education,* Vol. 11 (1963), p. 129.

[7] Petzold, p. 319.

[8] This article is a summary of the author's doctoral thesis, *The Development and Evaluation of Tonal Pattern Instruction in Music Reading for Beginning Wind Instrumentalists* (University of Massachusetts, 1973).

[9] J. G. Watkins and S. E. Farnum, *The Watkins-Farnum Performance Scale* (Winona, Minn.: Hal Leonard Music, Inc., 1954).

4. Is there any difference between the scores of the experimental and the control groups on the *Music Achievement Test*[10] (MAT)?
5. Is there any difference between the scores of the experimental and the control groups for either brass or woodwind instruments on the MAT?
6. Is there any difference between the scores of the experimental and the control groups for either high or low musical aptitude on the MAT?
7. Is there any difference between the concept scores of the experimental and the control groups on the pretest and posttest administrations of the Student Attitude Questionnaire (SAQ)?

Procedure

Approximately 90 students enrolled in the fourth-grade during the 1970–1971 school year in Bay Shore, N.Y., elementary schools served as subjects for this investigation.[11] Each student volunteered to study a wind instrument of his choice for one year. During this period private lessons were not allowed. Prior to instruction, all students were administered the *Musical Aptitude Profile*[12] and a Student Attitude Questionnaire. Recent scores on the Lorge-Thorndike Intelligence Test were obtained from the school records. The MAP scores and the Lorge-Thorndike Intelligence Test scores were used to equate statistically the experimental and control groups with respect to musical aptitude and intelligence.

The students attended three of the four elementary schools in the community. The fourth school was not included because it did not offer a music program similar to the other three. By random selection, one school conducted the experimental program, and the other two schools served as a control. Instruction was carried out by three of the five certified music teachers who volunteered to participate in the study. The three teachers were selected based on the equivalency of their ratings using the following criteria:

(1) Difficulty of Music. Music chosen to be performed at the conclusion of one year of lessons was analyzed. The minimum difficulty level for acceptance was performance in two keys, a range of a ninth, tempos of fast and slow, meters of 4/4, 3/4, 2/4, rhythm patterns of the difficulty of a dotted quarter and an eighth note, dynamics of loud and soft, and special signs including repeat and accidental signs.

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[10] R. J. Colwell, *Music Achievement Test* (Chicago: Follett Educational Corporation, 1969).

[11] The author wishes to acknowledge the indispensable assistance of Wayne Camp, Judith Young, George Brennan, Donald Persia, and the children in those schools where the data were collected.

[12] E. Gordon, *Musical Aptitude Profile* (Boston: Houghton Mifflin Company, 1965).

(2) Attrition Rate. The teachers chosen to participate in this study had a first year student dropout record of less than 10 percent.

(3) Scores on the *Minnesota Teacher Attitude Inventory*[13] (MTAI).

According to Standlee and Popham the MTAI measures not only teacher-pupil rapport, but also provides an indication of a teacher's general competence.[14] Each teacher scored higher than 90 percent of the reference group, nonacademics with five years training. Their scores placed them in the "superior" teacher category.

Prior to the actual experiment, each teacher participated with the investigator in a six-week pilot study. During this period, performance objectives for the year were identified, teaching procedures were clarified, and test administration (schedules and places) was established. The instructional material, constructed during the previous year, was used. This led to revisions in instances where a particular tonal pattern sequence proved to be too demanding for the majority of children to master, either because of the range or the skip involved. The SAQ was administered for clarity of directions, meaning of concepts, and test length. The directions were revised and certain concepts and scales were eliminated. The total test time was reduced to 15 minutes, which was more appropriate for the age group.

Instruction consisted of one 30-minute homogeneous lesson each week for 32 weeks. Class size was limited to six students. Both the experimental and control groups covered the same pitches, rhythms, meters, keys, tempos, dynamics, and special signs. The only variation in treatment was in the method of introducing pitches. The experimental group was introduced to pitch through a series of tonal patterns: sol mi, sol mi do, sol la sol, mi re do, sol do, sol fa mi, sol fa mi re do, do la sol, do ti do, and sol la ti do. Each pattern was taught as a single unit in three stages: (1) an aural presentation, (2) an auditory-visual presentation of the tonal pattern, and (3) an auditory-visual presentation of the pattern within a musical phrase. The students responded vocally, with tonal syllables or letter names, and instrumentally. The instruction book used was specially prepared with melodies containing the tonal patterns in order of presentation.[15]

Rhythm was presented in phrases to the experimental group. The students always responded to either the aural or visual presentation of melodic rhythm by chanting the phrase using the syllables "ta" for a ♩, "ti" for the ♪ and "ta-i" for the ♩. . Durational values were taught by calling attention to the number of subtle pulses given to a particular

[13] W. W. Cook, C. H. Leeds, and R. Callis, *Minnesota Teacher Attitude Inventory Manual* (New York: The Psychological Corporation, 1951).

[14] L. S. Standlee and W. J. Popham, "The MTAI as a Predictor of Over-All Teacher Effectiveness," *Journal of Educational Research,* Vol. 42 (1959), pp. 319–320.

[15] C. B. MacKnight and J. E. Young, *Hearing and Playing Musical Patterns for Wind Instruments* (Elizabethtown, Pa.: Continental Press, in press).

rhythm syllable. Ability to read melodic rhythm notation by sensing phrase rhythm was the emphasis of the training.

The control group used a standard method book, *Breeze Easy*, and proceeded in the manner dictated by the book.[16] There, a new pitch may be found with its letter name and fingering at the top of the page. The new pitch is one that must be learned in order to play one of the tunes on the same page. No effort is made to demonstrate the significance of the new pitch beyond that of a letter name, fingering, and sound.

Rhythm is taught as it directly relates to a beat in the book. For example, a ♩ is taught as a quarter note having the durational value of one beat in 4/4 meter. Melodic rhythm is practiced by counting, using a number to identify the ♩, "one and" for ♫, and "one and a" for the ♩. ♪. Unlike traditional instruction, the control group used rhythm syllables and were encouraged to sing assigned melodies with letter names.

During the final two weeks of the experiment, the investigator administered the WFPS, Form A, the MAT, Test 2, and a SAQ. Errors of performance on the WFPS include pitch, time, change of time, expression, slurs, rests, holds, pauses, and repeats. The author claims a reliability coefficient of .93 for all tests for musically select fourth-grade groups, and construct validity coefficients ranging from .64 to .94 with a median of .79 for performance groups. The MAT consisted of major-minor mode discrimination of chords and phrases; feeling for tonal center within cadences and phrases; and auditory-visual discrimination of pitch and rhythm. Test 2 has a reliability of .91 as estimated by the Kuder-Richardson 21 and a validity coefficient of .92 based on the correlations between test scores and teachers' ratings of achievement.

The SAQ, based on semantic differential format, was constructed by the investigator. The semantic differential is a technique for observing and measuring the psychological meaning of concepts. Ten concepts were selected that were related to the student's musical experiences and expected to produce individual differences. They included: musical instrument, music book, music lesson, band teacher, singing, writing music, listening to music, reading music, practicing, and playing a solo. The instrument consisted of seven bipolar adjectives placed at opposite ends of a five-point scale. The adjectives were: interesting-boring; painful-pleasurable; useful-useless; unimportant-important; successful-unsuccessful; bad-good; easy-difficult. Only the evaluative factor was used.

The position of the negative ends of each scale was randomized. Values of -2, -1, 0, $+1$, $+2$ were assigned to the adjective positions on the interposed ordinal scale. Scales such as interesting-boring were flipped from minus to plus before scoring. The rating values of each concept represented a part score, and the sum of the part scores for the ten concepts represented a total score. More favorable attitudes or a higher score resulted when the position of a stimulus concept was rated on the

[16] J. Kinyon, *Breeze Easy* (New York: Witmark, 1959).

scale closest to the following poles: interesting, pleasurable, useful, important, successful, good, and easy.

The SAQ was administered twice at an interval of one week as a measure of test-retest reliability. The Pearson product-moment coefficients were obtained by correlating over the total scores. A single average score (part score) was assigned each concept as based on the mean scale position of that concept for all scales and all students. The Pearson product-moment coefficient for the total score on the test-retest administration of the SAQ was .81, representing a fairly high degree of reliability.

To answer the questions investigated in this study, the criterion scores were analyzed for the main effects of treatment and the interaction between treatment and levels. For the purpose of data analyses, students were classified by treatment group, experimental or control; instrument, brass or woodwind; and musical aptitude, high (a percentile rank of greater than 50), or low (a percentile rank of less than 50) based on the national median for fourth-grade students provided in the MAP *Manual.*

Initially the analyses reported in the next section were carried out using analysis of covariance with intelligence and musical aptitude scores as the covariates. Both groups, however, were almost equivalent with respect to these covariates.[17] It was therefore not unusual that analysis of variance on the test scores resulted in similar findings. Inasmuch as analysis of variance is a somewhat better known statistical technique, it was used in the data analysis reported in this study.

Results

Posttest mean scores by treatment, instrument, and musical aptitude on the WFPS are given in Table 1. It is apparent from this table that the

Table 1

Means and Standard Deviations for Scores on the Watkins-Farnum Performance Scale

Level	Experimental Group			Control Group		
	N	M	SD	N	M	SD
Treatment	39	38.73	12.69	35	25.95	13.62
Brass Instruments	17	39.31	13.23	16	26.76	14.28
Woodwind Instruments	22	38.16	11.12	19	25.15	11.42
High Musical Aptitude	28	41.32	10.74	27	35.68	10.76
Low Musical Aptitude	11	36.15	11.69	8	16.23	11.66

[17] *Lorge-Thorndike Intelligence Test:* Experimental Group (M = 114.81; SD = 10.35), Control Group (M = 114.38; SD = 10.66; *Musical Aptitude Profile:* Experimental Group (M = 46.11; SD = 5.76), Control Group (M = 46.74; SD = 6.11).

Table 2
Summary of Analysis of Variance of Results on the Watkins-Farnum Performance Scale

Source of Variance	df	MS	F Ratio
Treatment (T)	1	2169.25	18.76*
Instrument (I)	1	21.89	<1
Musical Aptitude (MA)	1	1724.79	14.91*
T X I	1	0.92	<1
T X MA	1	672.11	5.81*
I X MA	1	374.68	3.24
Error	67	115.65	

* Significant at the .05 level.

mean difference between the two treatment groups consistently favored the experimental treatment.

An analysis of variance using a least-squares design with unequal cells was performed on the posttest scores of the WFPS.[18] A summary of the analysis is reported in Table 2. The test of significant differences between the criterion means revealed a significant treatment effect ($F = 18.76$, $p < .05$). As shown in Table 1, the tonal pattern students receiving the experimental treatment scored more than 12 points higher than the note identification students receiving the control treatment. No significant effect was found for instrument ($F = < 1$, $p > .05$) nor for the interaction of treatment and instrument ($F = < 1$, $p > .05$). Table 1 indicates that there was very little difference between the sight reading achievement of brass and woodwind students within each group. Further analyses revealed the main effect of musical aptitude ($F = 14.91$, $p < .05$) and the interaction of musical aptitude and treatment ($F = 5.81$, $p < .05$) to be significant. Table 1 reveals that the greater difference between levels of musical aptitude occurred among control students. The posttest mean score of 36.15 for low musical aptitude students in the experimental group was significantly higher than the mean of 16.23 for low musical aptitude control students ($F = 11.74$, $p < .05$) based on a simple-effects analysis. The five-point mean difference between the high musical aptitude experimental and control students was not significant ($F = 3.93$, ($F = 3.99$) $p > .05$).

The posttest means and standard deviations for the MAT total scores for both groups are given in Table 3. It can be seen that, except for the low musical aptitude experimental performance on the MAT, the mean differences favored the experimental group. The statistical analysis of the data appears in Table 4. The results of the analysis yielded a statistically significant difference ($F = 5.58$, $p < .05$) between the mean

[18] W. R. Harvey, "Instructions for Use of LSMLGP," (mimeographed paper, Ohio State University, February 1968).

Table 3
Means and Standard Deviations for Scores on the Music Achievement Test

Level	Experimental Group N	M	SD	Control Group N	M	SD
Treatment	39	33.60	9.56	35	28.35	10.30
Brass Instruments	17	32.38	9.97	16	26.54	10.76
Woodwind Instruments	22	34.81	8.40	19	30.15	8.63
High Musical Aptitude	28	41.11	8.09	27	29.22	8.11
Low Musical Aptitude	11	26.08	8.80	8	27.48	8.80

score of 33.60 attained by the experimental group and the mean control score of 28.35. Neither the main effects of instruments ($F = 1.60$, $p > .05$) nor the interaction of treatment and instrument ($F = < 1$, $p > .05$) was significant. Thus, type of instruction resulted in little difference in the auditory-visual performance of either brass or woodwind students. Table 4 confirms that the main effects of musical aptitude ($F = 12.17$, $p < .05$) and the interaction of treatment and musical aptitude ($F = 8.86$, $p < .05$) were both significant. No other interactions were significant.

An inspection of Table 3 suggests that the two treatments were differentially effective with high and low musical aptitude students. As indicated in this table, high musical aptitude students who received the experimental treatment scored 12 points higher than control trained students of similar aptitude, but experimental students classified as low musical aptitude students scored one point lower than their control trained counterparts. A test of simple effects disclosed that the 12-point difference between high musical aptitude groups on the posttest was statistically significant ($F = 29.77$, $p < .05$). The slight difference between the mean scores of the low musical aptitude groups on the MAT suggests that a plateau has been reached in their ability to match an aural stimu-

Table 4
Summary of Analysis of Variance of Results on the Music Achievement Test

Source of Variance	df	MS	F Ratio
Treatment (T)	1	366.19	5.58*
Instrument (I)	1	105.22	1.60
Musical Aptitude (MA)	1	789.89	12.17*
T X I	1	5.99	<1
T X MA	1	581.58	8.86*
I X MA	1	183.47	2.79
Error	67	65.67	

* Significant at the .05 level.

lus with a visual symbol. However, the experimental treatment was particularly effective with students of low musical aptitude as measured by the WFPS, a test of instrumental sight reading.

Several alternative explanations may be given for the failure to find similar results on the MAT as compared to the WFPS. (1) It may have been too early for the experimental effects to be developed with students of low musical aptitude. (2) If more positive results are to be expected after a year of instruction, then the reading instruction employed in this study did not provide sufficient training in listening and following a melodic sequence from left to right. An examination of the MAT data showed that low musical aptitude students were able to respond with accuracy to the auditory presentation of information alone, but were less able to respond to the simultaneous presentation of auditory-visual information. It is conceivable then that low musical aptitude students took longer to integrate their bimodal responses, and that additional training in left to right scanning of notation might improve their performance. (3) Another possible explanation may be offered in terms of age. Petzold found age to be directly related to competence in the auditory perception of the melodic elements of music.[19] It may be that age ten is too late in the musical life of the low aptitude child to develop his aural skills to an appreciable extent. (4) Finally, the MAT was administered during the final hour of the school day. It remains a possibility that low musical aptitude students were not as attentive on a test requiring a written response as they were when an instrumental response was demanded.

The results of the attitude study of students in both treatment groups before and after instruction are reported in Tables 5 and 6. The results were somewhat disappointing in that there were only slight differences between the pretest and posttest results for each group and between groups on the 10 concepts. An inspection of the data showed that the attitude scores of both groups were negatively skewed on the SAQ. The tendency was to use more positive evaluative qualifiers than negative evaluative qualifiers. A similar effect was noted in the data of those students who planned to terminate music lessons. Although a highly favorable response may be due in part to the fact that positive evaluative words appear earlier than their negative opposites in the language development of children, children and adults alike tend to see and report the quality of something in positive terms. In explaining this phenomenon, Boucher and Osgood suggest that the answer lies somewhere in the nature of our social structure and the circumstances required to maintain it. "It is hard," they say, "to imagine human groups whose members persistently look for and talk about the ugly things in

[19] R. G. Petzold, "The Development of Auditory Perception of Musical Sounds By Children in the First Six Grades," *Journal of Research in Music Education,* Vol. 11 (Spring 1963), p. 32.

Table 5

Means and Standard Deviations for all Concepts on the Pretest Administration of the Student Attitude Questionnaire

Concept	Experimental Group N = 43 M	SD	Control Group N = 42 M	SD
1. Musical Instrument	10.15	4.07	9.24	4.49
2. Music Book	8.65	5.07	8.96	4.39
3. Music Lesson	9.95	4.81	9.64	3.94
4. Band Teacher	10.60	4.06	10.58	3.25
5. Singing	4.55	8.08	5.98	6.85
6. Writing Music	6.30	6.26	5.87	7.27
7. Listening to Music	9.40	5.23	8.93	4.85
8. Reading Music	8.33	6.48	8.04	5.32
9. Practicing	8.83	5.97	8.89	4.37
10. Playing a Solo	7.25	6.38	7.40	5.89
All Concepts	84.00	39.91	83.53	32.63

Table 6

Means and Standard Deviations for all Concepts on the Posttest Administration of the Student Attitude Questionnarire

Concept	Experimental Group N = 35 M	SD	Control Group N = 32 M	SD
1. Musical Instrument	10.97	3.28	11.72	2.80
2. Music Book	9.71	4.56	10.25	5.59
3. Music Lesson	11.43	2.76	11.44	3.32
4. Band Teacher	12.86	1.83	12.63	1.93
5. Singing	6.40	8.47	5.31	9.60
6. Writing Music	8.11	6.18	7.97	7.42
7. Listening to Music	10.06	3.61	10.91	5.36
8. Reading Music	10.26	3.36	10.94	4.18
9. Practicing	10.31	4.36	10.88	3.81
10. Playing a Solo	8.91	5.96	11.75	4.20
All Concepts	99.03	32.61	101.30	28.71

life and in their neighbors long remaining together."[20] Apart from language usage and culture, another factor to consider may be that children who volunteer to study music view their progress differently from those who have no choice in the selection of the subject to which they must apply themselves.

[20] J. Boucher and C. E. Osgood, "The Pollyanna Hypothesis," *Journal of Verbal Learning and Verbal Behaviour,* Vol. 8 (1969), p. 8.

Conclusions

The results of this investigation suggest that melodic training based on the auditory-visual recognition of a series of tonal patterns is an effective strategy for teaching the meaning of notation to beginning music readers. Tonal pattern instruction is superior to the note identification teaching techniques and materials in the development of both sight reading skills and auditory-visual discrimination skills. The data strongly indicates that a high level of musical understanding as well as proficiency on an instrument can be achieved when instruction emphasizes: (1) identification of musical patterns, (2) active involvement in listening, (3) singing with tonal syllables, (4) chanting with rhythm syllables, (5) thought and conceptualization, and (6) preorganized reading materials that introduce tones and rhythms in their most frequent patterns.

In terms of the performance of the subgroups, the overall achievement of brass students relative to the woodwind students did not depend on which instructional method they received. However, differences in instruction appear not to be independent of levels of musical aptitude. Students of high musical aptitude achieved a high level of sight reading skill under both instructional methods, while students of low musical aptitude made greater progress under tonal pattern instruction. With respect to the development of auditory-visual discrimination skills, the tonal pattern method of teaching music reading is superior to the note identification method with students of high musical aptitude, but there is no apparent advantage to either method for students of low musical aptitude.

Though the present results are encouraging, they are subject to cautious interpretation. The teaching procedures and special reading materials were applied to one group of students by a single teacher. The extent to which the observed differences were due to teacher-method-class and how much to method remains unknown. Thus, the resultant generalizations are limited to the particular groups studied. What the present investigation does demonstrate is the possibility of using tonal pattern instruction as an alternative to the note identification technique for teaching music reading to beginning wind instrumentalists. Future research in this area might well be directed at the problem of generalization.

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