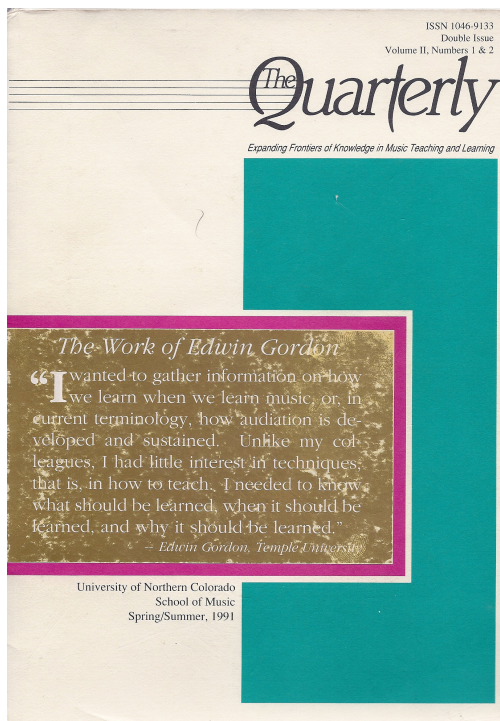


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The Effects of Gordon's Learning Sequence Activities on Vocal Performance Achievement of Primary Music Students

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Appropriate method is one of the key elements of successful instruction. An appropriate music method is systematic, sequential, comprehensive, and effective in achieving valid goals (Webster, 1970; Gordon, 1989). Such a method promotes retention and has a positive effect on student attitudes (Leonhard & House, 1972). At the primary level, appropriate method may also enhance developmental aptitude (Flohr, 1981).

There are several approaches to elementary general music instruction currently in use in the United States, either individually or, more typically, in eclectic combination (Mark, 1978). Although several of these approaches are commonly referred to as "methods," there is reason to question whether they fulfill the criteria for such a label (Gordon, 1989; Landis & Carder, 1972). The lack of a single, clearly defined method for elementary general music instruction is, according to some experts, a major problem which limits the effectiveness of music education at this level (Peters & Miller, 1982). In order to improve the effectiveness of music instruction, there is a need for researchers both to identify approaches which may fulfill the criteria for appropriate method and to evaluate the effectiveness of the identified approaches in light of those criteria (Gibbs, 1972; Siemens, 1969).

Gordon's Learning Sequence

One common approach to music teaching is the music learning theory of Edwin Gordon. "Method in the [music learning theory] instructional program is based upon learning se-

quence activities" (Gordon, 1989, p. 209). Gordon recommends that the first five to ten minutes of each music class be devoted to these activities.

Music learning theory is both systematic and sequential. The ordering of skills and content during learning sequence activities is based upon Gordon's taxonomies. The skills taxonomy begins with the student

"The music learning theory approach appears to have the potential for instructional effectiveness based upon Gordon's focus on the tonal and rhythm elements of music, the parallels between music learning theory and accepted learning theory, and research into the music learning process."

listening (aural) to individual tonal or rhythm patterns, then imitating those patterns by rote using neutral syllables and/or movement (oral). The next step is labeling using movable *do* solfege, rhythm syllables, or functional names (verbal association). The succeeding skills steps introduce series of patterns, notation, generalization to unfamiliar patterns, creative and improvisational activities, and finally theo-

retical knowledge of music.

One key difference between the learning sequence activities portion of music learning theory instruction and other common approaches to music pedagogy is the nature and specificity of Gordon's sequential taxonomies. Another is the focus on isolated patterns during the aural/oral, verbal association, and symbolic association skill levels. A third difference is the consistent separation of the rhythm and tonal elements of music. A more thorough discussion of Gordon's skills and content taxonomies, as well as other elements of the approach, may be found in his book *Learning Sequences in Music: Skill, Content, and Patterns* (1989).

Gordon suggests that the remainder of each music class be devoted to "classroom activities." Classroom activities in an elementary general music setting consist of traditional activities such as guided listening, dance, and the playing of instruments. The teacher coordinates learning sequence and classroom activities so that they complement and reinforce each other. The ultimate goal of learning sequence activities is to enable the student to listen to and perform literature with syntactical meaning during classroom activities (Gordon, 1989).

Prior to this study, the actual effectiveness of music learning theory in facilitating the achievement of valid goals within the elementary general music setting had not been experimentally measured. The music learning theory approach appears to have the potential for instructional effectiveness based upon Gordon's focus on the tonal and rhythm elements of music, the parallels between music learning theory and accepted learning theory, and research into the process of music learning (Shuler, 1987).

On the other hand, critics of music learning theory have raised several legitimate questions. First, is it an efficient use of limited instructional time to devote a portion of each class to learning sequence activities? Specifically, might any gain accrued through the inclusion of learning sequence activities be outweighed by the effects of the decreased amount of time therefore available for classroom activities? In other words, do learning sequence activities result in a net

gain or a net loss in music achievement? Second, do students trained to perform the isolated tonal and rhythm patterns or pattern chains that comprise learning sequence activities transfer this skill to a setting in which they must deal with music as a multidimensional phenomenon, i.e., with both the tonal and the rhythm components occurring simultaneously?

Previous investigations into the effectiveness of instructional approaches similar to music learning theory have indicated that such instruction may be effective in improving student achievement within a variety of settings. Palmer (1976) compared the effects of three instructional approaches—an early version of Gordon's music learning theory, the Kodály approach, and a traditional approach—on the rhythm reading of fourth grade general music students. The gain scores of the aggregate experimental (Gordon and Kodály) groups were significantly higher than those of the control (traditional) group in both meter discrimination and rhythm performance. There were no significant differences in achievement between the two experimental groups, but the mean improvement of the Gordon group was slightly higher than that of the Kodály group. Stockton (1983) investigated the effects of rhythm learning sequence activities on university students and concluded that the music learning theory approach was superior to a reading and listening approach in fostering rhythm understanding. MacKnight (1975) investigated the effects of a treatment very similar to learning sequence activities on the achievement of elementary instrumental music students. The experimental group attained a significantly higher level of aural and performance achievement than the control group, suggesting that the treatment had been effective.

Purposes, Hypothesis, and Secondary Question

The primary purpose of this study was to investigate the effects of Gordon's learning sequence activities on music achievement, with the intent of improving music pedagogy. This led to the following primary null hypothesis:

There is no difference in level of music

performance achievement between students who participate in learning sequence activities and those who do not participate in learning sequence activities, when the effects of developmental music aptitude and the teacher variable are held constant.

In order to investigate the primary hypothesis, it was necessary to develop an appropriate measure of music performance achievement. This led to a following secondary research question:

Can a music performance achievement measure be developed for use with third grade students that demonstrates satisfactory psychometric properties?

Method

Subjects

The sample consisted of 109 third grade general music students in three schools near Rochester, New York. The students represented a mixture of ethnic and socioeconomic backgrounds.

This sample was studied because the teachers of these students had been recommended by experts in the use of music learning theory and met a series of additional

criteria established by the investigator. The minimum criteria considered in teacher selection were:

- (a) regular use of learning sequence activities at the beginning of each class, preferably using the *Jump Right In* tonal and rhythm register books;
- (b) past participation in music learning theory training sessions conducted by Gordon;
- (c) expertise and experience in the use of at least one major music method other than music learning theory;
- (d) plans to teach more than one third grade general music class during the coming school year, with at least two classes of students enrolled in the same elementary school;
- (e) interest in the study; and
- (f) willingness to abide by the study's guidelines.

Of the ten recommended teachers, only four fulfilled all of the criteria. Three of these were able to obtain administrative approval to participate in the study. Two of the three teachers participated in the study.

Importance of the Third Grade Level

The third grade level was chosen as the focus for this study, for three reasons: (a)

Major Duple Introduction (establishes tempo, meter, key and tonality of A-flat Major)

♩ = 104

Major Duple Posttest Song: "I Have a Silly Little Bird"

(Adapted from Nye and Nye: *Music in the Elementary School*, 4th ed., p. 245.
Published by Prentice-Hall, Inc., ©1977. Adapted by permission.)

I have a sil- ly lit- tle bird who is well known to you. He
lives in- side a clock and each hour he sings cuck- oo. Each hour he
sings cuck- oo... Cuck oo!

Figure 1. Major Duple Introduction and Song

there has been relatively little research into primary music achievement based on the effectiveness of a specific instructional method, and none based on music learning theory; (b) this age level is, according to Gordon, the period during which developmental music aptitude stabilizes in a majority of children (1979, p. 4); and (c) the third grade is a level at which research has indicated that attitudes toward music instruction begin to decline (Broquist, 1961; Nolin, 1967, 1973; Svengalis, 1978).

Teachers

Both teachers in the study had more than ten years of full-time music teaching experience, including at least four years using music learning theory in elementary general music classes. Teacher 1 had more formal training in the use of music learning theory. Teacher 2 had more training and experience in vocal pedagogy. Both teachers had training and experience in Orff techniques, and Teacher 1 had additional expertise in the Kodály and Manhattanville approaches. The teachers self-administered the rhythm and tonal subtests of the *Musical Aptitude Profile* (Gordon, 1965) in order to provide data regarding their personal music aptitude. Teacher 1 reported a raw score of 75 (out of 80) on the rhythm subtest and 77 (out of 80)

on the tonal subtest. Teacher 2 reported a rhythm raw score of 79 and a tonal raw score of 78.

Design

Each participating teacher taught three third grade general music classes. One of each teacher's classes contained special reading groups, a fact which necessitated an unbalanced design. Teacher 1 taught two control (C) classes, one of which contained special reading groups, and one experimental (E) class. Teacher 2 taught two E classes, one of which contained special reading groups, and one C class. Assignment of each class as either C or E was determined by the toss of a coin.

Treatment

In the experimental, classes, the teachers devoted the first 25 percent of each class period to learning sequence activities. For these activities the teachers followed the format and sequence specified in the tonal and rhythm register books of the *Jump Right In* general music series developed by Gordon and Woods (1986). The remaining 75 percent of each E lesson was devoted to classroom activities.

In the C classes, the teachers devoted 100 percent of each class period to classroom

Minor Triple Introduction (establishes tempo, meter, key and tonality of f minor)

♩ = 75

Minor Triple Posttest Song: "Dame, Get Up"

Dame, get up - and bake your pies, bake your pies, bake your cher-ry pies. Dame, get up - and bake your pies - on Christ-mas Day in the morn-ing.

Figure 2. Minor Triple Introduction and Song

activities. Both teachers were free to determine the content of classroom activities in order to determine whether any effects of learning sequence activities would generalize across inevitable differences between teachers. Each teacher, however, was required to cover the same classroom activities content with each class and to maintain a log of those activities. The C classes spent their additional time pursuing classroom activities with more repetition and depth.

The treatment period began in late September and ended in late April. Each group met twice weekly. The groups taught by Teacher 1 met 55 times for 20 minutes each class session. The groups taught by Teacher 2 met 48 times for 25 minutes each class session.

Testing Materials and Procedures

Measure for Preexisting Differences

The *Intermediate Measures of Music Audiation*, or IMMA (Gordon, 1982) is a scale of developmental music aptitude appropriate for use with students in grades one through four. Research has suggested that this scale is successful in predicting musical achievement (Gordon, 1982, 1984; Woodruff, 1983). The IMMA was administered as a pretest in order to permit statistical adjustment for preexisting differences among students that could affect their performance.

Performance Achievement Measure

The investigator sought a measure for an area of music performance that would be appropriate for young students and that would require the students to deal with both the tonal and rhythm dimensions of music simultaneously. Singing is an important area of music skill which fulfilled these criteria. Although no single measure of vocal performance has achieved widespread acceptance, several investigators have found that the rating scale format is effective for measuring performance (Abeles, 1971, 1973; Cooksey, 1974, 1977, 1983; DeCamp, 1980; DeYarman, 1972; Dittmore, 1970; Gordon, 1967, 1984; Jarjisian, 1981, 1983; Jessup, 1984; Levinowitz, 1984, 1985). Levinowitz (1985) investigated the relative effectiveness of three types of rating scales: a continuous five-criterion scale, an additive five-criterion scale, and the *Clarinet Performance Rating*

Scale (Abeles, 1971). The results were inconclusive, but the tonal and rhythm sections of his continuous and additive rating scales had acceptable interjudge reliability.

The criterion measure in this investigation consisted of a singing performance test designed by the researcher (see figures 1 and 2). Due to the length of the testing process, and to avoid a training effect, the measure was administered only as a posttest. The measure of five rhythm and five tonal criteria was adapted from Levinowitz (1985) and organized as additive rating scales:

RHYTHM

demonstrated a sense of steady TEMPO
performed MICRO BEAT patterns accurately
performed MACRO BEAT patterns accurately
performed DIVISION pattern accurately
performed ELONGATION pattern(s) accurately

TONAL

demonstrated a sense of TONALITY (mode)
demonstrated a sense of PITCH CENTER (keyality)
maintained FUNCTIONS of patterns
performed TONIC patterns accurately
performed DOMINANT patterns accurately

Two songs, one in minor tonality and triple meter and the other in major tonality and duple meter, were selected and revised to reflect the content of the rating criteria. The songs were transposed to relative keys in order to avoid confusing students in the E groups, because when different modes are

Table 1: Three-way interjudge reliabilities on performance subscores and composite.

Test or Subscore	alpha
Tonal Total	0.84
Major Tonality	0.85
Minor Tonality	0.81
Rhythm Total	0.92
Duple Rhythms	0.88
Triple Rhythms	0.84

Table 2: Principal components factor analysis: Twenty performance criteria scores added across judges.				
Measure and Criterion	Minor Tonality Factor	Major Tonality Factor	Duple Rhythm Factor	Triple Rhythm Factor
Minor Tonality	0.66	0.29	0.13	0.47
Minor Pitch Center	0.75	0.28	0.21	0.26
Minor Functions	0.82	0.34	0.08	0.25
Minor Tonic	0.81	0.32	0.14	0.24
Minor Dominant	0.81	0.17	0.27	0.10
Major Tonality	0.35	0.66	0.36	0.20
Major Pitch Center	0.36	0.67	0.26	0.39
Major Functions	0.28	0.82	0.28	0.17
Major Tonic	0.42	0.64	0.30	0.11
Major Dominant	0.37	0.64	0.27	0.30
Duple Tempo	0.07	0.27	0.57	0.35
Duple Micro Beat	0.02	0.27	0.48	0.46
Duple Macro Beat	0.16	0.25	0.64	0.22
Duple Division	0.17	0.23	0.46	0.52
Duple Elongations	0.08	0.31	0.69	0.10
Triple Tempo	0.33	0.25	0.29	0.66
Triple Micro Beat	0.25	0.09	0.29	0.84
Triple Macro Beat	0.27	0.18	0.56	0.42
Triple Division	0.22	0.14	0.10	0.51
Triple Elongation	0.30	0.05	0.57	0.12
Eigenvalue	10.33	1.98	1.37	1.05
% of Variance	51.6	9.9	6.8	5.2
Cumulative	51.6	61.5	68.4	73.6

presented during learning sequence activities they are always presented in relative keys. An introduction was composed for each song in order to establish the tonality, key, meter, and tempo of the song. The participating teachers were given an opportunity to examine, field-test, and suggest revisions in the performance

measure. The final version reflected these revisions.

During each of the final four class periods before the beginning of posttesting, the teachers—using the introductions provided for each song—devoted a portion of the classroom activity time to teaching the double major and triple minor posttest songs. Guidelines for

Table 3: Descriptive statistics on the IMMA Pretest: Four treatment-by-teacher groups and six individual classes.

	<u>Teacher 1</u>			<u>Teacher 2</u>			<u>Combined Teachers</u>		
	$\bar{X}$	S	n	$\bar{X}$	S	n	$\bar{X}$	S	n
Control Classes	63.76	5.57	37	65.13	6.13	15	64.15	5.71	52
C: Regular Reading	62.75	6.37	20	65.13	6.13	15			
C: Special Reading	64.94	4.35	17	--	--	--			
Experimental Classes	62.78	3.69	18	64.28	5.92	39	63.81	5.33	57
E: Regular Reading	62.78	3.69	18	63.84	5.26	19			
E: Special Reading	--	--	--	64.70	6.60	20			

Table 4: Descriptive statistics on the performance posttest: Four treatment-by-teacher groups and six individual classes.

	<u>Teacher 1</u>			<u>Teacher 2</u>			<u>Combined Teachers</u>		
	$\bar{X}$	S	n	$\bar{X}$	S	n	$\bar{X}$	S	n
Control Classes	22.92	13.78	37	27.87	11.40	15	24.35	13.23	52
C: Regular Reading	16.95	12.00	20	27.87	11.40	15			
C: Special Reading	29.94	12.64	17	--	--	--			
Experimental Classes	13.72	10.29	18	35.85	13.30	39	28.86	16.12	57
E: Regular Reading	13.72	10.29	18	35.79	14.68	19			
E: Special Reading	--	--	--	35.90	12.24	20			
Combined Classes	19.91	--	55	33.63	--	54	26.71	14.92	109

the teaching of these songs were provided, and the teachers were directed to devote the same total amount of time in each of their classes to teaching the songs. Each teacher determined the amount of time that was necessary for the classes to learn the songs, based on the length of time that it took for the slowest class to achieve a satisfactory level of group performance. The faster classes had the opportunity to overlearn the songs.

During the testing process each student (a) listened to the introduction for the major duple song, (b) sang the major duple song, (c) listened to the introduction for the minor triple song, and (d) sang the minor triple song. The students' performances of the major and minor song were recorded on separate tapes. The order was mixed, and performances were rated by three judges.

Analysis

The data analysis was divided into two main parts. In the first, the effectiveness of the performance achievement measure was assessed. In the second, the effects of the learning sequence activities treatment on performance achievement were examined. The criterion level for significance was .05 in all appropriate statistical procedures.

Results

Effectiveness of the Measure

Interjudge Reliability. The consistency

of the rating scale scores among judges was evaluated. The two-way interjudge reliability coefficients for composite scores ranged from .76 to .83. The three-way composite interjudge reliability coefficient, calculated using the Cronbach alpha procedure, was .91 (Table 1). The three-way alphas for the subscores ranged from .81 to .92. All of these reliability coefficients exceeded the minimum acceptable level of .70.

Dimensionality. The ability of the measure to reflect separate tonal and rhythm dimensions across the two songs was evaluated. A review of the intercorrelations for each dimension and a principal components analysis on these intercorrelations limited to components with eigenvalues greater than 1.0 (Table 2) supported the presence of clear tonal and rhythm dimensions appropriate to the intended content of the rating scales. The four components resulting from the analysis indicated the tonal measures to consist of major and minor dimensions and the rhythm measures to consist of duple and triple dimensions. The separation between the two rhythm dimensions was, however, blurred by the presence of several cross-loadings.

Pre-Existing Group Differences

A general examination of the data was conducted by teacher and treatment groups for signs of pre-existing differences in group

Table 5: Hierarchical multiple regression: Effect of treatment on performance posttest scores in the full sample.

F = 16.94 p < 0.001							
Variable Name	F for Entry	α for Entry	Cumulative R2 After Entry	Adjusted R2 After Entry	Adjusted R2 Change	Simultaneous Coefficient	p<
IMMA	17.88	0.000	0.143	0.135	0.135	0.91	0.000
Teacher	28.60	0.000	0.325	0.312	0.177	3.70	0.311
Treatment	0.01	0.924	0.325	0.306	-0.006	-8.31	0.016
Interaction	11.90	0.001	0.395	0.371	0.065	17.06	0.001
Constant	--	--	--	--	--	-34.87	0.011

Table 6: Hierarchical multiple regression: Effect of treatment on performance posttest scores omitting special reading classes.							
F = 11.90 p < 0.001							
Variable Name	F for Entry	α for Entry	Cumulative R2 After Entry	Adjusted R2 After Entry	Adjusted R2 Change	Simultaneous Coefficient	p<
IMMA	7.18	0.009	0.093	0.080	0.080	0.666	0.013
Teacher	30.16	0.000	0.369	0.351	0.271	9.33	0.025
Treatment	0.69	0.410	0.375	0.348	-0.003	-3.25	0.400
Interaction	4.60	0.036	0.415	0.380	0.032	12.03	0.036
Constant	--	--	--	--	--	-24.82	0.141

IMMA scores (see Table 3). The results of a Scheffé test indicated that pre-existing differences in mean IMMA scores between the four treatment-by-teacher groups were not significant.

Effects of Teacher and Treatment

A general examination of the data was conducted by teacher and treatment groups for signs of group mean differences on the performance posttest (see Table 4). Group mean scores varied widely, ranging from 19.91 for the combined classes taught by Teacher 1 to 33.63 for the combined classes taught by Teacher 2.

A hierarchical regression analysis was used to analyze the effects of the IMMA covariate and the teacher and treatment independent variables on the performance posttest scores. The variables were entered in the following sequence:

$$\text{Posttest} = \text{IMMA} + \text{Teacher} + \text{Treatment} + (\text{Treatment} * \text{Teacher})$$

The results of this analysis (Table 5) indicated a significant interaction between the teacher and treatment variables. Among students taught by Teacher 1, the mean performance posttest score of the C groups was significantly higher than that of the E group. Among those taught by Teacher 2, the mean of the C group was significantly lower than that of the E groups.

Effects of Special Reading Class

A post-hoc analysis was conducted to determine if the presence of the special reading groups had obscured any significant effects of the learning sequence activities treatment. This was done by omitting the two special reading classes from the same analyses used for the entire sample. The results of a Scheffé test indicated that pre-existing differences in mean IMMA scores between the six individual classes in the study were not significant (Table 3).

The same hierarchical multiple regression as had been used for the entire sample was conducted on the posttest performance scores of the students in the regular reading classes. This analysis produced the same general results as that with the entire sample (Table 6). Among students taught by Teacher 1, the mean performance posttest score of the C groups was significantly higher than that of the E group. Among those taught by Teacher 2, the mean of the C group was significantly lower than that of the E groups.

Potential biasing effects. Anecdotal reports from the administering teachers were collected. Teacher 1 indicated that the range of the songs used may have unfairly biased the results of the measure against his students, who had less vocal training in the upper register. The E class taught by

Teacher 1 had particular trouble with the songs due to students' pre-existing problems in using their singing voices. Teacher 1 also felt that he had devoted too little time to teaching the songs before administering the posttest.

The classroom activities listed in the teachers' chronological logs differed between teachers, but were consistent within the three classes taught by each teacher. Teacher 1 incorporated a wide variety of activities drawn from Orff, Kodály, and Manhattanville curricula as well as standard textbook series. Examples of these eclectic activities included active involvement with music of other cultures; layered development of movement, singing, and Orff instrument accompaniments by the class; and creative and improvisational activities. Teacher 2 also incorporated some Orff activities, but focused primarily on performance activities. He devoted several weeks to teaching his students to play the recorder and prepared both a school musical and a Christmas concert.

Discussion

Music Performance Achievement

The overall performance measure developed for this study was extremely reliable, as were its subscores. The subtests also appeared to be effective in measuring separate tonal and rhythm dimensions. The performance measure may, therefore, prove useful to future investigators in examining the music performance achievement of third grade students. It is also possible that this device may prove useful in measuring the performance of students at a variety of age levels. If not, it may be possible to adapt the measure for various age levels by adjusting the difficulty of the rating scale criteria or the songs selected. Further research is required to determine the generalizability of the measure.

The performance measure also has potential for comparing achievement in major and minor tonalities. In order to improve the effectiveness of the measure for comparing achievement in duple and triple meters, it may be necessary to alter some of the rhythm criteria.

The range of the two songs used in the performance measure presented a problem

for the students taught by Teacher 1.

Teacher 2, who had a more extensive background in vocal pedagogy, reported no range problems. Future application of this performance measure may require rewriting the songs to narrow their range or selecting participating teachers on the basis of vocal pedagogy.

The results of this study indicate that to control the effects of the teacher variable on the outcome of the performance measure, the total amount and type of training that the students in a sample receive on the songs should be specified. It might be desirable to encourage the use of individual singing as part of this training, in order to permit the teachers to evaluate students' preparedness for the testing procedures.

Music Method

No broad claims can be made regarding the effectiveness of learning sequence activities on the basis of this investigation. Further research is needed before learning sequence activities can either be embraced or rejected as an appropriate component of elementary general music class instruction. The study should be replicated with a larger number of participating teachers, perhaps applying less stringent requirements for participation in order to increase the generalizability of the results.

The fact that the learning sequence activities treatment appeared to be effective in increasing the music performance achievement of the students taught by Teacher 2 suggests that the method may be effective and warrants further investigation. In spite of the fact that the teachers who participated in the study were recognized experts in the use of music learning theory activities and were biased in favor of the experimental treatment, and in spite of the fact that the posttest measure was designed to measure tonal and rhythm performance—areas that might logically be expected to improve as a result of participation in learning sequence activities—the effectiveness of the experimental treatment appeared to vary dramatically from one teacher to the other. This difference in effectiveness might have been due to pre-existing differences between the classes that were not accounted for by IMMA,

or it may suggest the need to identify additional teacher qualities necessary for successful use of learning sequence activities.

Future investigators may wish to pretest their sample in order to account for pre-existing performance differences, perhaps after simplifying and shortening the performance testing process. Investigators should continue to collect data regarding the characteristics of teachers who use music learning theory successfully, in order to identify qualities that contribute to this success. If such qualities can be taught, then teacher preparation programs should be designed to develop them. For example, the success of the students of Teacher 2 suggests that vocal pedagogy may play an important role in the success of learning sequence activities. On the other hand, if successful music learning theory instruction requires an unusual combination of unteachable qualities, such as extraordinarily high music aptitude and intelligence, then the practical value of music learning theory as a general pedagogical approach is limited, and a more accessible alternative method should be sought.

Another appropriate area for future investigations is the optimum nature and amount of classroom activities that should be coupled with learning sequence activities. Teacher 1 emphasized eclectic classroom activities, while Teacher 2 placed greater emphasis on traditional performance activities. This difference may have contributed to the greater success of learning sequence activities in classes taught by Teacher 2. The teachers in this study were not instructed to coordinate their classroom activities with the learning sequence activities outlined in the tonal and rhythm register books. Future investigators may wish to use the *Jump Right In* general music series (Gordon & Woods, 1986), as the authors of this series have attempted to facilitate such coordination.

This investigation should be replicated in order to determine the effects of time factors on the success of learning sequence activities. The teachers who participated in this study felt uncomfortable limiting the amount of time which they devoted to learning sequence activities to only 25 percent of their short class periods. There may be an

optimum amount of time to devote to learning sequence activities, which might equal or even exceed the ten-minute maximum suggested by Gordon.

Additional research is also needed into the effects of music learning theory instruction on aural music achievement, retention of both aural and performance music achievement, developmental music aptitude, and attitudes toward music instruction.

Conclusions

Secondary question. The music performance rating scales developed as part of this investigation demonstrated satisfactory psychometric properties when used with third grade students.

Primary hypothesis. No conclusion can be drawn regarding the effects of learning sequence activities on music performance achievement, due to the presence of an interaction between the treatment and teacher variables. The effects of learning sequence activities on performance achievement appear to vary depending upon the teacher. Some teachers may be more effective when they incorporate learning sequence activities into their instructional procedures.

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