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# The Application of Gordon's Empirical Model of Learning Sequence to Teaching the Recorder

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The recorder is widely used in the elementary school music curriculum. A common pedagogical approach in recorder method books is to begin with the reading of notational symbols (Burakoff & Burakoff, 1970; Duschenses, 1957; Kulbach & Nitka, 1965; Newman, 1970; Sevush, 1973; Weber, 1984). This approach tends to stress music reading or symbolic association with less attention to auditory and psychomotor skills, or to the establishment of a relationship between hearing a particular tonal or rhythmic pattern and executing it accurately. Leonhard and House state, in their discussion of principles of method, that "rich tonal experience gained through singing and playing . . . should precede and accompany the study of notation. The best sequence moves from aural experience with tonal and rhythmic patterns to the notation which represents those patterns" (1972, p. 305).

It is this idea of sound before symbol that is so valuable in teaching music to children. The concept, which reinforces a basic precept of learning theory, moving from the known to the unknown, has been advocated by Edwin Gordon. His empirical model of learning sequence (*Learning Sequence in Music: Skill, Content and Patterns*, 1984) is a music learning theory rooted in the aural aspect of music and based upon a definitive sequential learning process.

The purposes of this study were (a) to develop a method for elementary recorder instruction in which the sequential objectives are logically ordered by Gordon's empirical model of learning sequence; and (b) to compare the effectiveness of this method with a traditional method which stresses note

reading. The dependent variables were performance achievement on the recorder and change in the level of developmental music aptitude.

## Procedure

The subjects of the study were third grade children attending a laboratory school at a

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*“The experimental method which emphasizes the concept of sound before symbol and supports the principles of the method outlined by Gordon, is a more effective approach to teaching beginning recorder than a traditional note-reading approach.”*

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regional midwestern university. All 27 students were in the same class, had the same supervising teacher, and had participated for two years in a classroom general music program. The children were divided into two groups by the use of a random number table. The choice of a group to receive the experimental treatment was determined by the toss of a coin.

During the first week of the semester, the *Primary Measures of Music Audiation* (PMMA) (Gordon, 1979) was administered as a pretest to students in both groups. The test served as the measure of developmental music aptitude.

The two groups were compared using age,

sex, previous and concurrent musical experience, and raw scores on Gordon's PMMA (see Table 1). The groups were treated as equal because they were comparable with respect to the following variables: school environment, musical experiences both in and out of school, mean age of group, and mean raw score of PMMA. The "unmatched" variable was sex. The control group had eight boys and six girls, while the experimental group had six boys and seven girls.

### Method

The groups were instructed separately by the investigator. Each group received four lessons of 15 minutes duration each week for a period of 12 weeks.

#### Introducing the Recorder

The introductory activities were designed to give the children a background in the history of the recorder, information about the members of a recorder consort, examination of the parts of a recorder, procedures for the care of the recorder, and basic executive skills involved in playing the pitches B, A, and G (*mi, re, do*). These were similar for both groups and included listening to recorded examples of Renaissance recorder music and rote activities in playing the first pitches on the recorder, including echoing

the teacher and playing names and rhymes on one or two pitches.

#### The Control Group

Concurrent with learning to play the first three pitches, B, A, and G, the control group was introduced to the visual symbols for these notes as well as some basic rhythmic notation using *The Classroom Recorder* (Burakoff & Burakoff, 1970). Treatment for the control group involved a teaching-learning procedure in which individual fingerings, pitches, and rhythm symbols were presented one at a time and then assembled in the playing of songs from notation.

The basic techniques used by the investigator in introducing pitches included having the children look up the fingerings in the book, echo the teacher playing the pitch, and locate and discuss the staff position of the new pitch. The basic techniques used in teaching a song were:

1. Having the children find the phrases of the song and mark the phrases in the music.
2. Having the children determine the form of the song.
3. Having the children chant the rhythm of the song, phrase by phrase, with Chev  rhythm duration syllables. (The children were already familiar with these.)
4. Having the children clap the rhythm of the song, phrase by phrase.

**Table 1.** Equality of Groups

	Control	Experimental
Number of students	14	13
Age in months	109.14	108.84
Sex:		
Female	6	7
Male	8	6
PMMA (pretest raw score):		
Tonal	36.35	37.00
Rhythm	32.92	32.69
Composite	69.28	69.69
Music experiences out of school:		
Piano or violin	5	5
Church choir	2	2

5. Having the children say the pitch names in rhythm while fingering the notes of a phrase; having the children play the phrase.
6. Having the children play the entire song.
7. Having the children sing the song.

In addition to learning songs, a portion of each period was devoted to drilling on rhythm and pitch patterns with flash cards.

### The Experimental Group

Principles for the experimental method were determined by the five skill levels of discrimination learning outlined in Gordon's empirical model of music learning sequence (1984, p. 22):

1. Before learning to play a song on the recorder, the song must first be learned as a whole, by rote, vocally.
2. The individual melodic and rhythmic patterns of the song must be learned also, by rote, by singing, and by chanting.
3. Verbal association systems must be attached to melodic and rhythmic patterns of the song.
4. The melodic content of a phrase must be taught without rhythm, and the rhythmic content without melody. Only after each is learned independently are they combined.
5. Symbolic association (notation) can be introduced only after the children have aurally developed a vocabulary of tonal and rhythmic patterns through learning several simple songs on the recorder.

Treatment of the experimental group involved a teaching-learning procedure in which the children first learned to sing the song by rote. In learning to play it on the recorder, each melodic and rhythmic pattern was isolated and initially sung or chanted. A verbal association system was then associated with the pattern, and the syllables were associated with the finger pattern.

The basic techniques used by the investigator in teaching a song included:

1. Having the children learn a song, vocally with words, by rote, and sing it in its entirety.
2. Having the children, one phrase at a time:
  - a) echo sing the pitches on a neutral syllable without rhythm;
  - b) echo sing the pitches with *sol-fa* syllables, still without rhythm, while fingering; and
  - c) echo play the pitches of the phrase, still without rhythm.
3. Having the children echo chant the rhythmic patterns of the phrase, with a neutral syllable and with Gordon rhythm duration syllables.
4. Having the children echo the teacher playing

the combined tonal and rhythmic patterns of phrase 1.

5. Repeating the process for each phrase of the song.

6. Having the children play the entire song.

After the children had learned five songs by this rote process, symbolic association (notation) was introduced. The children were given the notation for a known song and asked to play the song while looking at the notation. The purpose of having them play known songs with notation was to have them associate the notational symbols for the melodic and rhythmic patterns learned in the song with the syllable names and then to associate the syllables with the audiation of the patterns (Gordon, 1984, p. 46).

In addition to learning songs on the recorder, the experimental group spent five minutes at the beginning of each period performing tonal and rhythm patterns through "singing, chanting, and kinetics (movement)." The purpose of these activities, which Gordon calls learning sequence activities (LSA), is to develop a sense of tonality and meter and to develop a vocabulary of tonal and rhythm patterns. The ordering of skills and content in learning sequence activities is based on Gordon's taxonomies (1984, p. 199).

### The Posttests

During week 14 of the semester, the PMMA was administered again under the same conditions as the pretest. In addition, an investigator-designed rating scale performance test was given. Each child was asked to individually perform five of the songs which had been learned during the semester (see Figure 1). Each song was rated in three dimensions: melodic accuracy, rhythmic accuracy, and executive skills accuracy (posture, hand position, fingering, tone quality, and articulation). A score sheet with the specific criteria for each dimension for each song was devised by the investigator (see Figure 2). One point was given for each criteria item performed correctly. There was a possible combined total of 25 points for the rhythmic dimension, 24 points for the melodic dimension, and 25 points in the executive skills dimension, for a total possible composite score of 74 points. Guide-

lines for the evaluation were:

### Rhythmic Dimension

1. Begins with a consistent tempo—plays one measure with a consistent tempo.
2. Sense of meter—plays with accurate subdivisions of the macro beat.
3. Macro beat patterns—plays all  $\text{♩}$  patterns accurately.
4. Macro and micro beat patterns—plays all combinations of  $\text{♩}$  and  $\text{♪}$  accurately.
5. Maintains consistent tempo—plays entire song in a consistent tempo.
6. Elongations—plays all  $\text{♩}$  accurately.

### Melodic Dimension

1. Begins on correct pitch.
2. Sense of tonality—plays with a sense of either *do* (G) or *la* (E) as being the tonal center.
- 3, 4, 5, and 6. Each of the specific patterns must be played accurately each time it occurs in the song.

### Executive Skills Dimension

1. Posture—sitting up straight with back away from the chair and with arms away from the rib cage.
2. Hand position—both hands on the recorder, left hand on top, and fingers positioned in such a way that the holes are covered. If children fingered a note correctly, but did not get a true pitch due to faulty coverage, points were deducted for hand position.
3. Articulation—use of the tongue rather than puffs of air to attack each tone.
4. Tone quality—primarily judged on intonation. Air speed was not so fast as to cause sharpness, nor so weak as to cause flatness.
5. Fingering—use of correct fingering for each pitch in the song.

The performances were videotaped individually by the investigator. After the testing, the performances were viewed and

evaluated by the investigator using the guidelines previously outlined. At a later time, the performances were independently evaluated by another college music educator. The scores of the researcher and the other educator were similar. This was expected since the evaluation guidelines provided by the investigator were very specific.

## Results and Conclusions

To compare mean increases in PMMA scores, a t-test procedure for testing equality of means for independent samples was implemented (see Table 2).

At the 0.05 level, the mean increase in composite scores was significantly greater for the students taught by the investigator-designed method than for the students taught by the traditional method. In fact, with  $p = 0.021$ , the most significant mean increase above was with the composite score. At the 0.05 level, the mean increase in tonal scores was not significantly greater for the experimental group; however, it should be noted that the mean increase for the experimental group was significantly greater at the 0.071 level.

At the 0.05 level, the mean increase in rhythm scores was significantly greater for the students taught by the investigator-designed method than for the students taught by the traditional method. Given the decline in mean rhythm score for the control group, it is concluded that the delay of symbolic association, the extensive emphasis on rote learning, and the time devoted to the rhythm learning sequence activities seemed to have benefitted the experimental group in the development of rhythm audiation.

**Table 2.** Comparison of Mean Increases in PMMA Scores

Variable	Control			Experimental			<i>t</i> <i>p</i>	
	<i>n</i>	<i>Mean</i>	<i>S. D.</i>	<i>n</i>	<i>Mean</i>	<i>S. D.</i>		
Composite	14	0.35	4.55	13	3.53	2.93	2.14	.021
Tonal	14	0.57	1.50	13	1.38	1.26	1.52	.071
Rhythm	14	-0.21	4.25	13	2.15	2.67	1.72	.049

<b>Table 3.</b> Comparison of Mean Recorder Performance Scores								
	Control			Experimental				
<i>Variable</i>	<i>n</i>	<i>Mean</i>	<i>S.D.</i>	<i>N</i>	<i>Mean</i>	<i>S. D.</i>	<i>t</i>	<i>p</i>
Composite	14	39.75	14.89	13	56.96	14.93	2.99	.003
Melodic	14	15.61	5.53	13	19.85	5.06	2.07	.024
Rhythmic	14	13.11	5.34	13	20.69	4.43	4.00	.000
Ex. Skills	14	11.04	5.03	13	16.42	6.23	2.48	.010

Table 4. Analysis of Songs Used for the Performance Achievement Test						
Variable	CONTROL		EXPERIMENTAL		t	p
	Mean	S.D.	Mean	S.D.		
Song 1						
Rhythm	3.18	1.71	4.62	0.51	3.01	.004
Melody	3.07	1.28	3.54	0.97	1.06	.149
Ex. Skills	2.61	1.24	3.54	1.33	1.88	.036
Composite	2.95	1.22	3.90	0.82	2.38	.033
Song 2						
Rhythm	3.00	1.97	4.03	1.48	1.54	.068
Melody	3.00	1.47	3.08	1.46	0.14	.446
Ex. Skills	2.46	1.41	3.54	1.46	1.94	.032
Composite	2.82	1.52	3.55	1.28	1.34	.096
Song 3						
Rhythm	3.18	1.73	4.12	1.31	1.58	.064
Melody	3.96	1.57	4.42	1.41	0.79	.277
Ex. Skills	2.46	1.18	3.31	1.45	1.66	.055
Composite	3.20	1.31	3.95	1.31	1.48	.076
Song 4						
Rhythm	2.75	1.81	4.54	0.48	3.57	.001
Melody	3.82	1.80	4.57	0.86	1.40	.088
Ex. Skills	2.29	1.27	3.27	1.20	2.07	.025
Composite	2.95	1.51	4.13	0.69	2.64	.008
Song 5						
Rhythm	0.96	1.45	3.38	1.46	4.32	.000
Melody	1.75	2.13	4.23	1.58	3.40	.001
Ex. Skills	1.14	1.46	2.77	1.44	2.91	.004
Composite	1.29	1.61	3.46	1.39	3.74	.001



It is also interesting to note that for the aggregate group, the mean increase in the melodic dimension was significant at the .001 level, and the mean increase in the rhythmic dimension was significant at the .10 level. It is concluded that recorder instruction is valuable, regardless of type of instruction, in increasing developmental music aptitude scores for third-grade children. The fact that the most significant increase occurred in the tonal dimension suggests that playing the recorder is a valuable aid in the development of tonal audiation.

### **Rating Scale Performance Test**

Again, a t-test procedure for testing equality of means for independent samples was implemented. The results are presented in Table 3. In each dimension of the rating scale performance achievement test (melodic, rhythmic, and executive skills) and in the composite score, the experimental group scored significantly higher than the control group at the .05 level of significance ( $p = .024, .000, .010, \text{ and } .003$  respectively).

As with the PMMA scores, the most significant difference in performance scores occurred in the rhythmic dimension. Both groups used rhythm duration syllables; the control group used the Chev  system and the experimental group the Gordon system. Palmer (1976) investigated the relative effectiveness of the two systems and found no significant difference in achievement between the groups using the two systems. Based on this single study, rhythm learning sequence activities, which emphasize a kinesthetic reaction to the basic beat and the subdivided beat, and the delay of symbolic association, led to a more secure performance for those in the experimental group.

Another consideration when comparing the effectiveness of the two methods involves the degree of isolation of rhythmic and tonal patterns in the two teaching processes. In the control group, rhythmic patterns were isolated and chanted, and then chanted in the context of the song from notation. Then the pitches were added.

This process demanded that the children coordinate the fingering with visual recognition of pitch and a specific rhythm pattern in one step. In the experimental group, the

tonal patterns of a phrase were learned without rhythm and subsequently associated with the finger patterns. The rhythm patterns for the phrase were learned (through echo chanting) and then coordinated with the melodic pattern of the phrase. The success of this technique of teaching the melodic content of the phrase, independent of the rhythmic content, supports Gordon (1984) in his recommendation to teach the two components separately, combining them only after the students are able to audiate the content of each pattern.

In the dimension of executive skills, the experimental group again scored significantly higher ( $p = .010$ ) than the control group. It is concluded that in the early stages of instruction the children could more readily concentrate on forming good executive skill habits because they were not required to cope with an encoding process in addition to the physical demands of playing an instrument.

### **Analysis of Individual Songs**

An analysis of the individual songs used for testing leads to other insights. These results are presented in Table 4. The songs with the most significant differences of mean composite scores were "Scotland's Burning" and "Cricket in the Night," the last two songs learned. "Scotland's Burning" was more difficult (with respect to executive skills) than "Juba," "Worship Time," or "Four in a Boat," due to the presence of both high and low D.

"Cricket in the Night" was the most difficult of all the songs for several reasons. It contained all seven diatonic pitches learned during the semester, it was the longest song, and it was the only song which did not use melodic repetition in the phrase structure. Considering that the song was relatively more complex than the others, and that proportionately less lesson time was spent learning the song, the superior performance ( $p = .000$ ) is of special note. As the songs became longer and more difficult, the experimental group learned them more quickly and easily than the control group.

A final factor which must be considered in the discussion of the comparative achievement of the two groups is that of the motivation and the enthusiasm of the children. At the onset of the experiment, the level of

*Juba*

Ju-ba this and Ju-ba that, Ju-ba saw a yel-low cat, Ju-ba up and Ju-ba down, Ju-ba run-ning all a-round!

*Worship Time*

Hear the tem-ple bells as they soft-ly chime; Call-ing the peo-ple,— "Come for wor-ship time."

*Cricket in the Time*

All thru the night, Moon - light sil - ver bright, Cric - ket sings his ti - ny song,  
sings it through the whole night long, All through the night.

*Scotland's Burning*

Scot - land's burn - ing, Scot - land's burn - ing, Look out! Look out!  
Fire! Fire! Fire! Fire! Pour on wat - er pour on wat - er.

*Four in a Boat*

Four in a boat and the tide rolls high, Four in a boat and the tide rolls high,  
Four in a boat and the tide rolls high, Wait - ing for a pret - ty girl to come by and by.

**Figure 1.** Songs used in the research project.

enthusiasm in both groups was very high. As the semester progressed, the level of enthusiasm remained higher for the experimental group. Based on subjective impressions from working with the children, the investigator has concluded that the experimental method was a more interesting way for the children to learn because:

1. The children learned the songs more easily and more quickly.
2. The teaching process was more personal in that during the initial rote-learning stages, the source of the material was the teacher, not the printed page.
3. The addition of notation later in the semester was exciting for the children because it was

"real music" and "something new," and it was introduced at a time when the initial excitement of playing an instrument had subsided.

Recognizing the limitations of this study, the investigator believes, based upon empirical data as well as subjective impression, that the experimental method which emphasizes the concept of sound before symbol and supports the principles of the method outlined by Gordon (1984) is a more effective approach in teaching beginning recorder than a traditional note-reading approach.

### References

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Student's Name _____			
	RHYTHMIC DIMENSION	MELODIC DIMENSION	EXECUTIVE SKILLS DIMENSION
"Four in a Boat"	1. Begins with consistent tempo 2. Sense of meter 3. Macro beat patterns 4. Macro and micro beat patterns 5. Maintains consistent tempo elongation patterns	1. Begins on correct pitch 2. Sense of tonality 3. G-B-G-B-E-D patterns 4. G-B-G-B-D'-D'-A patterns 5. B-A-G-B-G pattern	1. Posture 2. Hand position 3. Articulation 4. Tone quality 5. Fingering
"Scotland's Burning"	1. Begins with consistent tempo 2. Sense of meter 3. Macro beat patterns 4. Macro and micro beat patterns 5. Maintains consistent tempo	1. Begins on correct pitch 2. Sense of tonality 3. D-G patterns 4. A-B patterns 5. D'-D' pattern	1. Posture 2. Hand position 3. Articulation 4. Tone quality 5. Fingering
"Cricket in the Night"	1. Begins with consistent tempo 2. Sense of meter 3. Macro beat patterns 4. Macro and micro beat patterns 5. Maintains consistent tempo elongation patterns	1. Begins on correct pitch 2. Sense of tonality 3. A-G-A patterns 4. G-A-B-A-G patterns 5. D'-B-A-G pattern	1. Posture 2. Hand position 3. Articulation 4. Tone quality 5. Fingering
"Worship Time"	1. Begins with consistent tempo 2. Sense of meter 3. Macro beat patterns 4. Macro and micro beat patterns 5. Maintains consistent tempo	1. Begins on correct pitch 2. Sense of tonality 3. E-D-A-G-E patterns 4. B-A-G pattern	1. Posture 2. Hand position 3. Articulation 4. Tone quality 5. Fingering
"Juba"	1. Begins with consistent tempo 2. Sense of meter 3. Macro beat patterns 4. Macro and micro beat patterns 5. Maintains consistent tempo	1. Begins on correct pitch 2. Sense of tonality 3. B-C-B-A patterns 4. C-B-A-G patterns	1. Posture 2. Hand position 3. Articulation 4. Tone quality 5. Fingering
<b>Figure 2.</b> Score sheet used in the research project.			

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