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Voluntary versus Compulsory Upper Elementary Choir Participation: A Comparison of Performance Evaluations

Rhonda S. Hackworth
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This study's purpose was to compare performance evaluations given by musicians and nonmusicians to upper elementary choirs with either voluntary or compulsory participation. Subjects were undergraduate music majors (n = 32) and nonmusic majors (n = 24) enrolled in a music methods course or choral ensemble. Subjects rated three different elementary choirs using a 10-point Likert scale and wrote comments on the best and worst aspects of each selection. The independent variable was participation in each choir: Choir 1 was voluntary, Choir 3 was compulsory, and Choir 2 was a mix of voluntary and compulsory. Results showed no significant difference between the three choirs' ratings or between the ratings of majors vs. nonmajors. All written comments of majors and nonmajors for best aspect were significantly different (p < .05). Written comments pertaining only to musical characteristics were significantly different for best aspect (p < .01) and worst aspect (p < .05).

The number of fifth and sixth grade students who choose to participate in choir can vary greatly. Research supports the idea that singing activities are generally enjoyed by students (Mizener, 1993); however, research has also concluded that a favorable attitude towards music decreases as students' grade level increases (Broquist, 1961). Therefore, the dilemma for music educators includes not only attracting upper elementary students to choir but also keeping them interested once they join. Teachers must make many decisions regarding the conception and maintenance of an elementary choral ensemble.

In addition to issues such as selection of singers, selection of music, and rehearsal time/location, educators must decide which type of participation, voluntary or compulsory, is better for their elementary choral program.

This study compared three upper elementary choirs from schools in the same district. Membership in choir one (fifth and sixth grade) is voluntary, and its rehearsal time occurs during an afternoon recess. Membership in choir two (fifth and sixth grade) is voluntary for fifth grade but compulsory for sixth grade, and its rehearsal is part of a class time. The third choir's membership (sixth grade only) is compulsory and also part of the general music experience; therefore, no rehearsal outside music class is required. Selections by each choir were recorded and subsequently evaluated by undergraduate music and nonmusic majors using a 10-point Likert scale for an overall rating and written comments for best and worst aspects of performance.

The research questions addressed in this study are:

1. Can any difference in performance quality be detected between choirs that are voluntary or compulsory?
2. Will there be any difference in the ratings assigned by music majors versus nonmusic majors?
3. Will there be any difference in the comments given by music majors and nonmusic majors?

The results will hopefully help music educators make informed decisions regarding the structure of guidelines for participation in ensembles for older elementary students.

Limitations

In order to examine elementary choral programs in their typical conditions, the choirs in this study were not exactly the same size and did not rehearse under identical circumstances. An elementary choir's typical performance venue was also considered, and recordings were made on stage during a choral festival rather than in a recording studio. The quality of the

recording may have been sacrificed, however, the choirs performed under more natural circumstances.

Review of Literature

There is little debate on whether or not ensemble participation is beneficial. Singing in an ensemble can enrich a student's life. Placing students in a choir can also help the teacher accomplish the first National Standard which states that all students in kindergarten through twelfth grade be able to sing "alone and with others, a varied repertoire of music" (Phillips, 1994).

A positive experience in an ensemble can have a lasting effect on a student's social and academic life. Students in both high and low socioeconomic schools can be positively influenced by performance in successful music groups (Nolin & Vander Ark, 1977). Success in choral or instrumental ensembles can also positively affect performance in other subjects. Bassett (1979) discovered that quantitative fluency of speech might be encouraged by choral reading instruction, and singing instruction may develop accuracy and precision of speech. Even though choral reading and singing instruction did not produce statistically significant improvement in language and reading achievement scores in Bassett's study, exceptional gains for the students in choral reading or singing treatment groups were noted.

Success in music ensembles can sometimes be attributed to attitude rather than ability. When Mizener (1993) studied the responses of children, he concluded, "it might be expected that subjects with more singing skill would have a more positive attitude toward singing, but these results seem to indicate that singing skill has little influence on attitude toward singing" (p. 243).

Research indicates that students in upper elementary grades have distinct opinions about ensemble participation. There are a variety of reasons why students join or stay away from an ensemble experience. Roewer's (2000) conclusion was that most students choose to participate because their

friends also participate. "Playing more challenging music" was the highest ranked reason for participation in an extracurricular ensemble according to Kohl (1997). In the same study, "too busy" was the reason most often sited for nonparticipation by responding students.

When asked what their anticipated favorite part of choir would be, most students in Roewer's (2000) study indicated "trips outside of school with the choir" as their first choice. Broquist (1961) discovered that "preparing for a program" was one of the highest rated activities by elementary choir students, and music reading activities (including singing with syllables, numbers, or letter names) was rated low.

Asmus (1985) compiled sixth grade opinions on student success or failure in music and assigned them to one of the following categories (a) ability, (b) task difficulty, (c) effort, and (d) luck. Most sixth graders' responses were assigned to the categories of ability and effort.

Most research shows that participation in a choral ensemble is best reserved for upper elementary grades in addition to a general music experience. According to Swears (1985), students in upper elementary grades are usually at a higher readiness level for a choral experience than younger students. Reserving the choral experience for older students creates anticipation for younger students and gives them something to move toward. Swears also stated, "Often times, children who are late in developing vocal skills will make tremendous progress in chorus" (p. 17).

There is some debate about the selection process for elementary school chorus. The word "audition" can have a negative connotation if not used delicately. Phillips (1992) suggested that offering a select choir as the *only* choral experience for elementary children sends the wrong message. Students who are not selected for the choir may be improperly labeled "non-singer." A select choir, according to Phillips, should be a supplement to a program that allows *all* children to sing in at least one choir. Others, however, believe that an audition can have a positive effect on participation. Sometimes more students are interested in joining the ensemble if

they are told they passed an audition (Hollenberg, 1996). It is a perception issue; a perceived value of the product.

According to Hollenberg (1996), the central issue is a choral experience for all versus a high-quality experience for the best students, and budget cuts and/or teaching loads are the reason most schools are not able to provide both. Another reason some schools choose not to provide both is an issue of scheduling. Finding time to rehearse an extra ensemble may be extremely difficult, especially when student attitudes are involved. Eighty percent of the respondents in Roewer's (2000) study said "morning rehearsals" would be their least favorite part of choir, suggesting that some students might choose not to participate if a morning rehearsal was necessary.

Hollenberg (1996) stated, "The key to an auditioned chorus at the elementary level is flexibility and leniency" (p. 37) and made the point that the goals of excellence and inclusion can both be accomplished by a "leniently select" choral program. This philosophy might be helpful when trying to assure a balance between male and female voices. If left completely to volunteer participation, a choir that is intended to be a mixture of male and female voices can often become a girls' choir.

One of the main deterrents to male participation in choral ensembles may be attributed to the perception that recreational singing by males is often discouraged in American society (Gates, 1989). This discouragement seems to follow a pattern in American culture; many boys elect to withdraw from singing activities at a certain age because of stereotypes that declare singing to be feminine (Castelli, 1986). These findings are reinforced by Chaney's (1996) survey of seventh and eighth grade students. When asked about their attitude toward singing, 81 percent of females reported a positive attitude toward singing in a group. Singing in a group was a positive experience for only 56 percent of males. In the same survey, 91 percent of females rated singing in general as a positive experience, compared to 62 percent of males.

In order to avoid a negative attitude toward singing by boys, Swears (1985) suggested general music programs from

kindergarten through sixth grade should include a strong and positive approach to singing and never allow the term "sissy" to be used as a label for singing. Phillips (1995) agreed saying, "When we can get boys singing confidently in the primary grades, there will be fewer recruitment and retention problems as they move through the intermediate and secondary levels" (p. 29). To accomplish this task, Phillips suggested providing examples of quality singing by males, talking positively about singing as early as first grade, and stressing the equal relationship between singing and sports (both require physical conditioning and practice).

Method

The purpose of this study was to compare performance evaluations given by musicians and nonmusicians to upper elementary choirs with either voluntary or compulsory participation. Five elementary choirs participated in a suburban school district's winter choral festival. The three choirs recorded for this study were chosen based on their varying participation structure. The first choir was voluntary and was comprised of fifth and sixth grade students who give up recess at the end of the day to attend rehearsal. Participation in the second choir is voluntary for fifth graders and compulsory for sixth graders. Rehearsing for this choir takes place during a music class time so that no outside rehearsal is required. Choir three's participation was also compulsory, and its membership was sixth grade only. Music class was also the setting for the third choir's rehearsal. Choir one had approximately 60 singers; 60 percent are female, 40 percent are male. Choir two had approximately 55 singers. The entire fifth grade portion of the choir was female, and the majority of the sixth grade portion was female. Choir three had 60 singers, and its female/male ratio was also 60:40. These descriptors are summarized in Table 1.

The number of singers, female/male ratio, and rehearsal time were the only characteristics considered when choosing the choirs in order to keep the comparison simple. It was

presumed that the socioeconomic backgrounds of the students were relatively the same due to the fact that all three schools are in the same school district and feed into the same junior high school.

Table 1

Summary Data of Demographic Information for Each Choir

Choir	Grade level	Participation	Rehearsal time	% of females/males
1	5^{th} & 6^{th} ($n = 60$)	Voluntary	during recess	60% female, 40% male
2	5^{th} & 6^{th} ($n = 55$)	5^{th} – Voluntary 6^{th} – Compulsory	during class	5^{th} – 100% female 6^{th} – 60% female, 40% male
3	6^{th} ($n = 60$)	Compulsory	during class	60% female, 40% male

Because a goal of this study was to evaluate sound only, performances were audio taped rather than videotaped. Prior research indicates that visual aspects such as physical appearance can often negatively affect the evaluation of a musical performance (Bermingham, 2000; Elliott, 1995; Killian, 1990; Morrison, 1998; Wapnick, Darrow, Kovacs, & Dalrymple, 1997; Wapnick, Mazza, & Darrow, 1998, 2000).

Each choir sang two songs (titles listed in Table 2) that were recorded live using a portable Sony MiniDisc recorder (model MZ-R30) and a RE-50 dynamic omnidirectional microphone, 150 Ω impedance. The microphone sensitivity switch on the MiniDisc recorder was set on high, and the automatic volume-limiting switch (AVLS) was set to normal.

Table 2

Titles of Musical Selections

Choir	Titles	Composer/Arranger
1	*Boats Sail on the River*	Mark Patterson
	First Footprints	Wolfe-White & Bodoin
2	*Sing a Song of Peace*	Jill Gallina
	Put a Little Love in Your Heart	Holiday, Myers, & Shannon
3	*Rock-A-My-Soul*	Linda Spevacek
	Eja, Eja (We Will Sing for Joy)	Mary Lynn Lightfoot

Each selection was recorded onto a high quality, 74-minute Sony MiniDisc, then transferred to a personal computer and edited using Cool Edit 2000. All selections were subsequently burned onto a CD-R compact disc using similar recording levels at a sampling rate of 44100 Hz in monaural sound at 16-bit resolution. The selections were recorded onto the compact disc in random order (Choir 1, tracks 1 & 3; Choir 2, tracks 4 & 5; and Choir 3, tracks 2 & 6). Each selection was normalized to 95 % for clarity, and as much applause as possible was edited out.

Following the editing process, music majors (n = 32) and nonmusic majors (n = 24) were asked to listen to the recorded compact disc and evaluate each selection. Their evaluation involved two parts, (a) giving a written assessment of the best and worst aspect of each selection, and (b) giving each selection an overall rating using a 10-point Likert scale (1 = worst, 10 = best). The evaluation instrument is shown in Figure 1. All the evaluation took place during the undergraduates' class time, where all students in each class evaluated while listening to the recording at the same time.

Both music and nonmusic majors were chosen as subjects to determine whether their evaluations would be similar or different. Different listeners often hear a variety of things in a choral performance, and the level at which a musician or nonmusician evaluates a performance is usually tied directly to his or her level of musical experience (Robinson, 1990). Copland's opinions (1939) support this position by proposing that the only real difference between a musician and a nonmusician listener is the level of musical appreciation and knowledge of music. Sometimes, a significant difference can be found between the ratings of musicians and nonmusicians (Johnson, 1996), and other times the differences are subtle. Wilson (1986) said, "Our intuition tells us that everyone at a performance hears the same music, but because certain people have a special point of view, they will respond to the performance in individual ways" (p. 60).

Choral Listening Project

Listen to the following 5th or 6th grade choirs and indicate the best and worst aspect of the performance. Then rate the choir overall on a scale of 1 to 10 (where 1 is terrible and 10 is perfect).

Choir #1
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #2
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #3
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #4
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #5
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #6
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

FIGURE 1.
Evaluation instrument.

Results

The first research question asked if any difference in performance quality could be detected between choirs that are voluntary or compulsory. In order to obtain an answer, a one-way analysis of variance (ANOVA) test was performed on the six choirs' ratings. No significant difference between scores was found ($p > .05$). A series of six ANOVA tests was performed to answer the second question, which asked if there would be any difference in the ratings assigned by music majors versus nonmusic majors. The results showed no significant difference between scores given by the two groups ($p > .05$). Table 3 shows the means and standard deviations for each example broken down by major and nonmajor categories.

Table 3

Means and Standard Deviations of Ratings Given by Music Majors and Nonmusic Majors.

		M	*SD*
Example 1	Major (*n*=32)	5.97	1.31
	Nonmajor (*n*=24)	6.06	1.37
Example 2	Major	5.75	1.48
	Nonmajor	5.85	2.08
Example 3	Major	6.16	1.39
	Nonmajor	6.19	1.75
Example 4	Major	6.34	1.79
	Nonmajor	7.19	1.52
Example 5	Major	6.13	1.56
	Nonmajor	6.50	1.62
Example 6	Major	6.34	1.56
	Nonmajor	6.83	1.89

Note. Examples rated on a 10-point Likert Scale (1 = worst, 10 = best). Choir 1 = Examples 1 & 3; Choir 2 = Examples 4 & 5; Choir 3 = Examples 2 & 6.

Choral Listening Project

Listen to the following 5th or 6th grade choirs and indicate the best and worst aspect of the performance. Then rate the choir overall on a scale of 1 to 10 (where 1 is terrible and 10 is perfect).

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Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #2
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #3
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #4
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #5
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

Choir #6
Best aspect of performance:
Worst aspect of performance:
Overall rating:

1 2 3 4 5 6 7 8 9 10
(worst best)

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Evaluation instrument.

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	Nonmajor	6.83	1.89

Note. Examples rated on a 10-point Likert Scale (1 = worst, 10 = best). Choir 1 = Examples 1 & 3; Choir 2 = Examples 4 & 5; Choir 3 = Examples 2 & 6.

The third research question asked if there would be any difference between the comments given by majors and nonmajors. Written comments for best and worst aspects of each example were tested first using a chi-square analysis (two groups – majors and nonmajors; two categories – musical and nonmusical) for each aspect. A significant difference between the best aspect comments of music majors and nonmusic majors was found: χ^2 (df = 1, N = 330) = 4.84, $p < .05$. No significant difference was found when comparing the musical and nonmusical worst aspect comments of majors and nonmajors: χ^2 (df = 1, N = 318) = .79, $p > .05$.

As the results of the chi-square were being analyzed, it became apparent that the majority of comments given by both groups were musical rather than nonmusical. Table 4 shows the percentages of comments given. To understand further distinctions between the large amounts of musical comments given by majors (87 %) and nonmajors (78 %), the musical comments were assigned to subcategories (diction, rhythm, intonation/blend, and other) by the researcher, and another chi-square analysis was performed. This analysis showed a statistically significant distribution of comments between

Table 4

Percentages of the "Best Aspect" and "Worst Aspect" Comments in Musical and Nonmusical Categories Given by Music Majors and Nonmusic Majors

	Musical	Nonmusical
	Best aspect comments*	
Music majors (n = 32)	.87	.13
Nonmusic majors (n = 24)	.78	.22
	Worst aspect comments	
Music majors	.97	.03
Nonmusic majors	.98	.02

Note. Each subject gave an average of 6 comments per musical selection in each category.
*$p < .05$

Table 5

Percentages of the "Best Aspect" and "Worst Aspect" Comments in Four Different Musical Categories Given by Music Majors and Nonmusic Majors

	Diction	Rhythm	Int./Blend	Other
	Best Aspect Comments**			
Music Majors	.19	.14	.16	.51
Nonmusic Majors	.06	.07	.28	.58
	Worst Aspect Comments*			
Music Majors	.08	.04	.54	.34
Nonmusic Majors	.10	.00	.44	.46

* $p < .05$. ** $p < .01$.

majors and nonmajors in both best and worst categories. See Table 5 for percentage results for musical comments on (a) best aspect: χ^2 ($df = 3$, $N = 274$) = 14.82, $p < .01$, and (b) worst aspect: χ^2 ($df = 3$, $N = 310$) = 10.76, $p < .05$.

Discussion

No significant difference between the ratings of the three choirs would make an excellent case for allowing a teacher to choose which type of choir experience (voluntary or compulsory) is best for students at any particular school. Some critics of compulsory participation may argue that a student who is interested enough to volunteer will be a better singer. The findings of this study, however, show that the type of participation does not seem to have any affect on the sound quality of the choir. This finding supports earlier research that compared attitudes toward music (Pogonowski, 1985). Therefore, it can be concluded that compulsory choir participation for sixth graders is not better or worse than voluntary participation.

The chi-square results in this study support prior research findings and opinions on the differences between responses given by musicians and nonmusicians (Copland, 1939; Johnson, 1996; Robinson, 1990; and Wilson, 1986). After examining the vast difference between the numbers of musical vs. nonmusical comments, it seems one confounding variable may be present in the comments given by nonmusic majors. Twenty-two of the 24 nonmusic major subjects were enrolled in a music course taught by the researcher, and the remaining two students were enrolled in a university choir. Although these students were instructed to give general opinions, they may have believed musical comments were expected more than nonmusical comments. Further research could answer this question by using nonmusic majors enrolled in nonmusic classes as subjects.

Encouraging a student to develop and maintain a positive attitude towards choir membership can have a lasting effect. In a survey conducted by Mizener (1993), a high response of "not sure" by elementary students when asked if they planned to participate in music at the secondary level indicates that more encouragement to participate and remain in elementary ensembles could result in continued participation at the secondary level. Mizener's study also suggested the strongest influences to participate in ensembles do not result from family and/or peers but from within school sources. Since no difference was found between the types of choirs tested in this study, it can be concluded that *any* type of encouragement toward participation in elementary ensembles will be beneficial.

Many students may not voluntarily participate in choral ensembles because they find singing difficult. Even though Lowell Mason made it very clear in 1838 that singing is a behavior that can be learned, the myth that some people cannot sing continues to be perpetuated (Phillips, 1992). Phillips suggested the key to dispelling this myth is to give students the tools they need in order to learn how to sing. He stated:

> Why is singing so threatening to students? Because,

> singing is a very complex skill. A writing teacher would not tell students to take out a piece of paper and write with no previous instruction in writing. But in music, we just expect students to open their mouths and sing! Those that can do; those that can't learn very quickly not to be heard. When one sings, one shares the inner self. That in itself can be intimidating, especially if one lacks confidence in the delivery system! (p. 18)

Giving a child the tools necessary to develop confidence in singing is a delicate and important process. Nurturing children through that process can positively affect their views of the musical experience. Conversely, rejecting them as singers after only one audition can have multiple negative implications.

Further research that compares different choirs singing the same musical selection would answer questions that were beyond the scope of this study. The ratings given to choirs performing the same music could provide a more exact comparison of the performance quality. Future research that compares choirs of exact conditions (same number of participants, same rehearsal conditions, same age level, same balance between genders) whose only difference is participation level might help to strengthen the present study's conclusions.

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Possible Relationships between Melodic Memory, Rhythmic Memory, and Sight-Reading in College Wind Instrumentalists

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The purpose of this study was to compare the scores of university music majors with varying experience levels on the following three tasks: melodic memory, rhythmic memory, and sight-reading. The participants (N = 64) were undergraduate and graduate instrumental music majors at a large southeastern university. All participants were wind instrumentalists. Participant demographic data were collected on a written form (instrument, graduate/undergraduate, major, number of years studied, and gender). The assessment tool utilized for sight-reading was the Watkins-Farnum Performance Test *(Form B). The data from this study suggest that musical experience is a better predictor for sight-reading skill development than short-term melodic and rhythmic memory. Melodic and rhythmic memory, as measured in this study, appear to have little or no correlation to sight-reading ability. Further study is warranted to determine the aspects of experience that are important in the development of sight-reading skills.*

There are many facets to music performance and preparation. There have been numerous attempts to identify and define the skills and abilities necessary to be a competent musician. The ability to read music at sight is considered by many to be an important component of music performance and preparation. Skill in music reading is a process characterized by the integration of cognitive skills and the emergence of a form of musical intelligence that can be integrated into the classroom (Kassell, 1998; Scripp, 1995).

There have been many investigations to determine the

factors and abilities related to sight-reading ability. McPherson's (1994) data suggest that strong sight-readers look for pertinent information (key and time signatures, obstacles, etc.), complete some form of mental practice *a priori*, maintain focus of attention throughout the task, self-monitor/evaluate during the task, and show high levels of musical awareness. In other words, the stronger sight-readers took a more organized approach to the task than did weaker sight-readers. Experience and overall performance ability seemed the most influential on sight-reading scores. Shehan's (1987) study found that both auditory and visual stimuli facilitate learning and retention of rhythm.

McPherson, Bailey, and Sinclair (1997) attempted to determine how five types of musical performance related to one another and developed a hierarchy of those types. Their model for musical training focused on sight-reading, playing by ear, playing from memory, performance of rehearsed music, and improvisation. They found that performing rehearsed music was most influenced by the ability to sight-read and the number of years of study on their instrument. Sight-reading was linked to performance level on the basis of a correlation between the amount of time required to get from the initial read-through to performance.

A review of the literature suggests that rhythm reading proficiency in the greatest single predictor of sight-reading success (Elliott, 1982; Gregory, 1972; Revelli, 1955; Thomson, 1953). Investigations have identified academic or conceptual factors influencing sight-reading instruction (Ciepluch, 1988; Levy, 2001), and the development of models for efficient instruction including computer-adaptive techniques (Lemons, 1984; Williams, 1998). Research suggests that sight-reading success can be affected by the procedures and activities engaged in during sight-reading (Boyle, 1970), as well as the amount of feedback the student received before and during the sight-reading process (Rogers, 1989).

Several investigators analyzed current sight-reading methodologies and designed programs to build upon the various approaches. Two studies compared the methodologies be-

tween schools identified with different levels of sight-reading proficiency and teaching techniques such as rote versus note learning (Shehan, 1987; Sunderland, 1994) while others completed a systematic analysis of the choral sight-reading materials that were adopted for state-wide use (Folkerts, 1998; Laverty, 1995). This research suggests that an important aspect of teaching reading may be the amount of exposure students have to larger and more varied repertoire. Sight-reading ability seemed to be linked to previous experience rather than specific sight-reading instruction. It appears therefore that sight-reading is a cumulative skill.

There has been little study of the relationship between music memory and sight-reading. However, Klinger, Campbell, and Goolsby (1998) found that children taught with an immersion technique, always presenting the song in its entirety, were able to perform songs with fewer errors than those taught in a phrase-by-phrase manner. Several studies suggest that melodic context and psycho-acoustic properties of music can influence perception of rhythmic and melodic memory (Boisen, 1981; Dowling, 1978; Fagen, 1997; Gardiner, Kaminska, Java, Clarke, & Mayer, 1990; Krumhansl, 1979; Large, Palmer, & Pollack, 1995; Palmer, Jungers, & Jusczyk, 2001; Saffran, Loman, & Robertson, 2000).

Rhythmic memory and melodic memory have been investigated in two studies in particular. Chivington (1990) found that rhythmic patterns that are isolated are more securely recalled and performed correctly within the context of a performance piece than patterns taught for transfer. Pembrook (1987) found that melodic memory is not reinforced through vocalization until the melody is sung accurately.

Goolsby (1994a) studied the eye movements of skilled and less skilled sight-readers and found that the better sight-readers used more regressive eye movement and tended to look farther ahead before returning to the point of performance. Sloboda (1976) found that musicians were better than were nonmusicians in the recognition and transcription of pitch notation patterns. Sloboda's subjects were asked to transcribe the patterns to paper while Goolsby's were asked to

vocalize the patterns observed. These studies suggest a possible relationship between memory and sight-reading.

Although there have been numerous investigations of the factors affecting sight-reading performance, no studies were found investigating memory as a factor in sight-reading performance. Goolsby (1994a) and Sloboda (1976) investigated factors that related to memory but neither investigated possible relationships between short-term memory and sight-reading. The purpose of this study was to compare the scores of university music majors with varying experience levels on the following three tasks: melodic memory, rhythmic memory, and sight-reading.

Method

Participants

The participants ($N = 64$) were undergraduate and graduate instrumental music majors at a large southeastern university. All participants were wind instrumentalists. All participants were volunteers, and were chosen on a convenience basis and informed that the focus of the study would include short-term memory and sight-reading measures. The sample intentionally consisted of a wide range of abilities, and included freshmen through graduate performance and music education majors.

Procedures

Participant demographic data were collected on a written form (instrument, graduate/undergraduate, major, number of years studied, and gender). Each participant completed three tasks: melodic memory, rhythmic memory, and sight-reading. The two memory tasks were given in a counterbalanced order. For the melodic memory test, each participant was allowed 30 seconds to study the 16-measure example (see Appendix A, Lieberman, 1959). The melodic example was then removed and the participant was asked to play the melody from memo-

ry. Performances continued until the example was completed or until the performer chose not to continue. For the rhythmic memory test, the participant was allowed 30 seconds to study the rhythmic pattern taken from the *TapMaster* procedures book (see Appendix B). The participant proceeded to perform the pattern until completion of the example or until an indication was given by the student not to continue. A pilot study was completed using the melodic and rhythmic memory tests to determine the length of time allowed for preperformance study. The time was initially 15 seconds but that time was increased due to the low memory scores of those subjects.

The final portion of the experiment for all participants was the sight-reading task. The sight-reading task was last due to the possible length of the measure and to avoid possible "memorization practice" as the students completed the measure. The assessment tool utilized for this test was the *Watkins-Farnum Performance Test* (Form B). Beginning with Example 7, each participant received 10 seconds to study each example prior to performing the example. Prior to beginning each exercise, the participant was given two measures of metronome "clicks" based on the tempo marking indicated on each example. The participant proceeded, following the same procedure, playing through the remaining sight-reading examples until five measures were performed incorrectly or until the end of Example 14 was reached. An incorrect measure was defined as any pitch or rhythm mistake within a measure, which is the standard procedure for administration of the *Watkins-Farnum Performance Test.*

Assessment

All performances were recorded on videotape for subsequent scoring and reliability purposes. Each participant received three scores: (a) a melodic memory score (1-43), (b) a rhythmic memory score (1-45), and (c) a sight-reading score (number of correct measures, 1-190). The score obtained for the two memory tasks was the number of correct notes/rests performed. The standard *Watkins-Farnum Performance Test*

scoring procedure was used: Participants received a point for each correct measure. A second independent observer viewed performances of 20 percent (n = 13) of the participants. Inter-observer reliability (using the method of agreements/agreements plus disagreements) was acceptable for all three tasks (melodic memory, r = .915; rhythmic memory, r = .96; sight-reading, r = .906).

Results

Participants (N = 64) were relatively evenly distributed across the various demographic variables with the exception of the number of graduate students (n = 12) and undergraduate students (n = 52). There were approximately equal numbers of males (n = 28) and females (n = 36), and woodwind (n = 35) versus brass (n = 29) performers. The sight-reading scores of graduate students (M = 69.33, n = 12) were higher than those of the undergraduate students (M = 49.94, n = 52). The largest disparity between groups occurred between woodwind sight-reading scores (M = 68.77, n = 35) and brass sight-reading scores (M = 31.93, n = 29) (see Table 1).

Participants ranged in experience from freshman music majors to graduate performance majors with a range of 4 to 30

Table 1

Sight-reading scores based on demographics (N = 64)

Group	Mean sight-reading score	*n*
Undergraduate	49.94	52
Graduate	69.33	12
Female	56.61	36
Male	51.39	28
Brass	31.93	29
Woodwind	68.77	35

years of music study on their instrument (M = 10.19 years of study). The distribution of scores for rhythmic memory was from 10 to 32 notes/rests correct (M = 16.29). For melodic memory, a range of 2 to 20 correct notes was observed (M = 10.31; see Table 2).

Table 2

Years of Experience and Test Scores

Variables	*M*	*SD*
Experience (years)	10.19	3.69
Rhythmic memory	16.20	7.00
Melodic memory	10.31	4.04
Sight-reading test	52.08	39.06

In order to assess possible order effects, participants were divided into two groups. Group 1 performed the melodic memory test first and Group 2 performed the rhythmic memory test first. A t-test showed that there was no significant difference in scores between the two orders. Subjects who completed the rhythmic memory task first did not perform differently from those who began with the melodic memory task (t (62) = .31, p > . 05).

A correlation analysis was completed in order to ascertain the relationships among the variables included in this study (see Table 3). The strongest relationship was found between the Watkins-Farnum scores and the years of experience (r = .25). A two-tailed t-test showed a significant correlation between years experience and sight-reading scores (t (62) = 2.02, p < .05).

There were slight negative correlations between years of experience and rhythmic memory (r = -0.15) and years of experience and melodic memory (r = -0.18). Very low correlations were found between sight-reading scores and melodic memory (r = .06), and sight-reading scores and rhythmic

Table 3

Correlations Between Years of Experience and the Three Test Scores

	Experience Level	Melodic Memory	Rhythmic Memory	Sight-reading
Experience level	1.00			
Melodic Memory	-0.15	1.00		
Rhythmic Memory	-0.18	0.00	1.00	
Sight-reading	0.25*	0.06	0.02	1.00

*significant at the .05 level.

memory (r = .02). The relationship between rhythmic memory scores and melodic memory scores was essentially zero (r = .0009).

Discussion

The data from this study and from previous studies (Chivington, 1990; McPherson, 1994; McPherson, Bailey, & Sinclair, 1997) lend support to the assumption that musical experience is a strong predictor for sight-reading skill development. In addition to the significant correlation found in the present study, the data showed that graduate students scored, on average, 19 points higher on the sight-reading test than did the undergraduates. Interestingly, woodwind sight-reading scores were nearly double brass sight-reading scores. Due to the limited population in this investigation as well as the limited data, generalizations in this area would be inappropriate. Further research in this area is advisable seeking reasons behind this discrepancy.

It is interesting to note the negative, although small, correlation between years of experience and the two memory tests. This might suggest that short-term memory is a skill that the participants in this study have not actively developed in previous study. Further, there was a lack of relationship between the two memory tests and sight-reading scores. Further research is necessary to determine the role, if any, that memory may play in sight-reading. Goolsby's (1994b) find

ing that skilled sight-readers used both progressive and regressive eye movements when reading could be interpreted that short-term memory might reduce the amount of regressive eye movement utilized during the sight-reading process but further investigation is needed. One participant in the present study exhibited what appeared to be regressive eye movement, via videotaped observation, as a corrective measure. Midway through the introductory phrase, the participant's eyes clearly returned to the time signature. At the conclusion of the first phrase, the participant played the second phrase in the correct tempo/meter. The lack of correlation between rhythmic and melodic memory also might suggest that musical memory is not mode-specific.

Some participants chose not to continue during the memory tests while others improvised through to what they perceived as the end of the exercise. It is interesting to note that of those participants who improvised on the melodic memory test tended to improvise diatonically and with phrase structures similar to that of the first phrase of the exercise. This apparent tendency suggests further study in the realm of musical intuition or melodic expectancy as related to memory and/or sight-reading. For the rhythmic memory test, the improvisation tended to be attempts at logical rhythmic phrases. This rhythmic improvisation might be due to previous musical experiences or possibly due to partial memorization of the material. It is also possible that the rhythmic memorization task allowed for a more specific focus of attention by removing the additional pitch memory task. Further research might investigate the structure of melodic and rhythmic improvisation and possible relationships to melodic or rhythmic expectancy.

Results showed that woodwind participants' sight-reading scores ($M = 68.77$, $n = 35$, range = 15-199) were over twice as high as those of the brass participants ($M = 31.93$, $n = 29$, range: 2 to 89). It is speculated this might be due to the fact that more woodwind parts generally require more technical proficiency than do brass parts, however, further investigation with this task in mind is necessary for corroboration or alter-

native explanations of this assumption and to allow for more appropriate generalizations.

The results of this study suggest that musical experience exerts greater influence on sight-reading skill than short-term memory skills. Further study is warranted to determine the aspects of experience that are important in the development of sight-reading skills. Does melodic expectancy have an effect on sight-reading? If sight-reading is a cumulative skill as suggested by previous research (Folkerts, 1998; Laverty, 1995; Shehan, 1987; Sunderland, 1994), further research is necessary to determine what types of experiences aid in the development of sight-reading skills. Is it related to the quantity or quality of the musical materials performed?

Is it easier to sight-read within an ensemble setting or individually? The participants within this investigation sight-read alone to allow for more accurate data collection. It is possible sight-reading scores were affected by performance anxiety. If sight-reading is important to the development of young musicians, additional research is needed to improve the efficiency with which sight-reading is taught.

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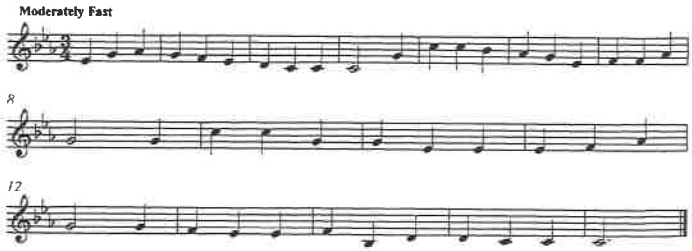
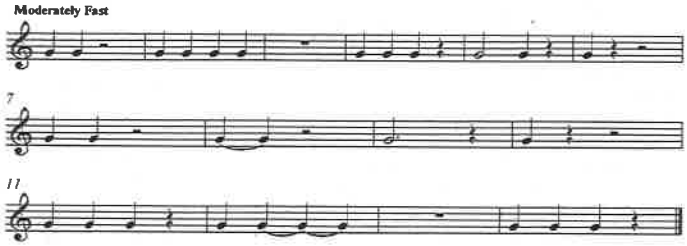
Appendix A

Melodic Memory Performance Example (Lieberman, 1959)



Appendix B

Rhythmic Memory Performance Example (TapMaster)



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The Effect of Foot-Tapping on Rhythmic Sight-Reading Accuracy In Instrumental Music Performance

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Music educators have continually sought out pedagogical approaches and tools that would assist the sight-reading process. One such tool that has found many advocates is that of foot-tapping. Many music teachers have concluded that foot-tapping is a useful technique in teaching rhythm, tempo, and beat, based on the observed relationship between foot-tapping and beat and tempo consistency. Others are opposed to using foot-tapping, arguing that foot-tapping may distract audiences and provide the performer with an additional physical task that becomes more of a hindrance than an aid. The purpose of this study was to investigate the effect of foot-tapping on the rhythmic sight-reading accuracy of undergraduate instrumental music majors. Sixty instrumental music majors, selected from a university concert band, were asked to perform four rhythmic sight-reading exercises determined to be of the same degree of difficulty by a panel of experts. The study was of ABAB design, with the independent variable (foot-tapping) incorporated during the B interval. The following observations were made: the total number of measures performed correctly with foot-tapping was not significantly higher, foot-tapping caused more stops of pauses, and tempo fluctuation occurred more frequently with foot-tapping. Continued research utilizing varied situations and with different levels of performers should explore further the relationship between foot-tapping and instrumental performance. Music educators should give these findings some consideration as well as investigating other studies and methods that will help devise effective instructional strategies and pedagogical tools for teaching sight-reading skills.

Learning, in any subject area, depends upon the visual and aural perception of sounds, symbols, and configurations of various types. Consequently, learning and communication are facilitated through the use of general systems that have a wide area of application. The communication system of music depends upon sounds and symbols that can be generally classified, gradated, and used as stimuli (Bobbitt, 1970).

Gregory (1972) stated that a prime educational goal of any discipline should be the development of an independent learner. In music, an obvious prerequisite to independence is the ability to sight-read. Sight-reading has been defined as the ability to read and perform music at first sight, that is, without preparatory study of the piece (Elliott, 1982b). Music educators generally agree that the ability to read music at sight is an essential skill for the instrumental performer (Bobbitt, 1970; Garofalo, 1976; Gregory, 1972; Morgan, 1947, Mursell, 1956), although, evidence shows that "as group, high school students...are considered to be poor sight-readers." (Carey, 1959). In fact, Carey writes that in "public school music there is perhaps no single problem which is as universal in scope as that of sight-reading."

That this problem exists to such a degree is likely to a general lack of understanding of the sight-reading process itself. Precisely how skilled sight-readers accomplish that task remains ambiguous. Many instrumental music educators still subscribe to Mursell's (1956) advice that: "if we want to establish skilled and rapid reading, there is only one way to do it, and that is by extensive reading: i.e. by reading large amounts of music."

The findings of Charles Elliot (1982a), combined with those of other researchers such as Boyle (1969, 1970), Mursell (1956), and Waters, Underwood, & Findlay (1997) also support the contention that the regular practice of reading rhythm patterns is likely to be beneficial for improving sight-reading ability.

Music educators have continually sought out pedagogical approaches or tools that would assist the sight-reading process (Laverty, 1995; McCabe, 2004; McPherson, 1994; Rogers,

1996). One such tool that has many advocates is that of foot-tapping. Many music teachers have concluded that foot-tapping is a useful technique in teaching rhythm, tempo, and beat, based on the observed relationship between foot-tapping and beat and tempo consistency (Pierce, 1990, 1992). However, studies involving foot-tapping in an ensemble setting have had mixed results. Boyle (1970) and Skornika (1958) cited improved experimental group sight-reading scores using rhythmic concepts, including movement. However, Salzberg and Wang (1989) cited that less experienced subjects were more successful when counting out loud and more experienced subjects showed no ability differences. Certain studies have noted a lack of effectiveness, citing movements as more difficult than counting with younger musicians (Salzberg & Wang, 1989) and a distraction to rhythmic learning, in that students concentrate on the movements more than the music (Persellin, 1992). Furthermore, many researchers studying mixed-age groups postulate that maturation rather than training may have the greatest effect on improvement (Groves, 1969; Jersild & Bienstock, 1935).

The purpose of this study was to investigate the effect of foot-tapping on the rhythmic -reading accuracy of undergraduate instrumental music majors. Specifically, the investigator sought to determine if the use of foot-tapping would decrease the amount of rhythmic errors encountered in sight-reading.

Method

Sixty freshmen instrumental music majors, selected from a university concert band, served as subjects for this study. All subjects performed four original, eight-measure excerpts, each of equal difficulty as determined by a panel of experts. In this method, each of the 4 exercises was notated as one-pitch rhythm exercises. As subjects were required to perform rhythms only, the exercises were notated on a single line with all references to dynamics and articulations omitted. Subjects were asked to perform each exercise on a comfortable pitch.

Variables that were measured included: (a) Stops or Pauses (defined as a hesitation to perform the next rhythm), (b) Tempo Fluctuations and, (c) Total Errors.

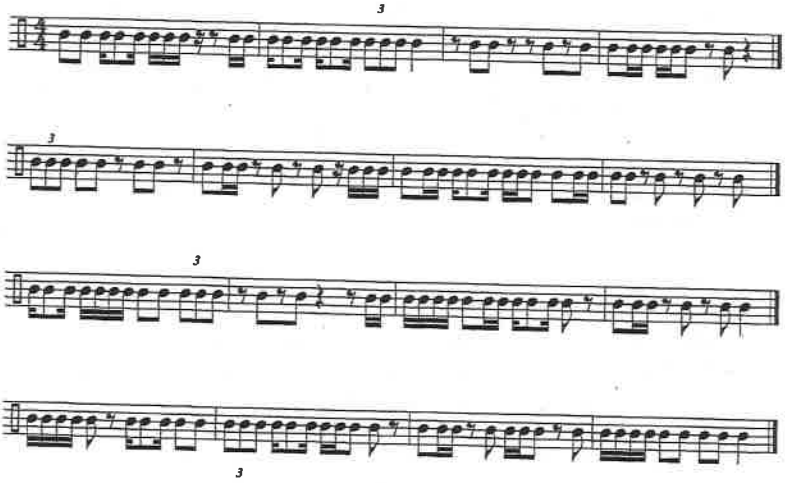

FIGURE 1.
Sight-reading examples.

The tempo (quarter note = 80) of each exercise was given by the researcher using a metronome. The metronome was turned off as soon as the student began to perform. A 20-second pause was given between exercises. The first and third exercises were performed with no foot-tapping, while the second and fourth incorporated foot-tapping.

All test performances were administered by the researcher and recorded in an acoustically treated studio. The recordings were made using a Sony MZ-R37 mini disc recorder and an Audio-Technica ATR 25 stereo microphone. Each performer was identified by number (1-60) which was announced at the beginning of each testing session.

Two expert instrumental music educators independently

scored each recorded performance. This scoring procedure consisted of identifying how many measures were performed correctly, counting every error committed and then placing it in one of three categories: (a) Rhythmic Error, (b) Stops or Pauses, and (c) Tempo Fluctuations. Judges were asked to note all errors regardless of the number committed in any given measure. These errors were calculated separately for exercises utilizing foot-tapping and exercises not utilizing foot-tapping. Finally, the total number of errors with and without foot-tapping were calculated and compared. Inter-judge reliability for the scores was 88%.

Results

Figure 2 represents the percentage of measures performed correctly by all subjects, with and without foot-tapping. The data show that there was only a 7% difference between the errors committed with and without foot-tapping.

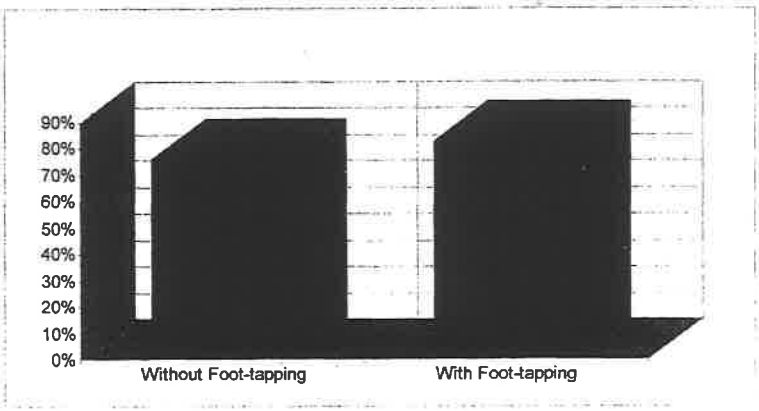

FIGURE 2.
Measures performed correctly.

Figure 3 represents the errors committed by all performers assigned to each of the three error categories expressed as percentages of the total number of errors committed with and without foot-tapping. Results were calculated by combining the two independent variables. Results indicate that *Rhythmic Errors* were both committed equally (50%), *Stops and Pauses* were more common when the foot was used (73% vs. 27%), and *Tempo Fluctuations* occurred less frequently when the foot was used (35% vs. 65%). Further inspection of Table 2 also shows that on a whole, rhythmic errors accounted for 56% of the total errors committed throughout all examples.

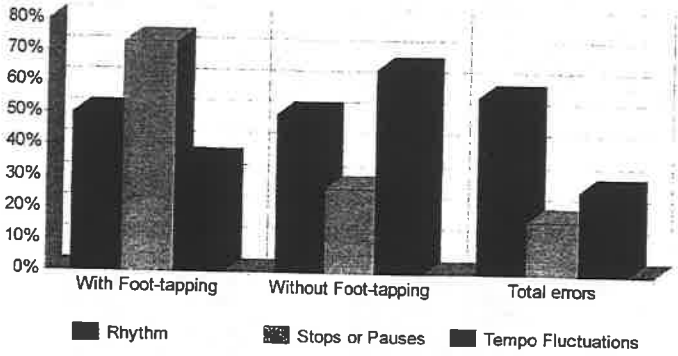

FIGURE 3.
Errors committed by category.

Table 1 represents the total number of errors committed with and without foot-tapping. Results indicate that the amount of total errors were equal in both cases.

Table 1

Total Percentage of Errors

Without foot-tapping	50%
With foot-tapping	50%

Discussion

Although these findings indicate that there are no differences between the total number of errors committed with and without the use of foot-tapping, the data show that the use of foot-tapping may be helpful in maintaining a steady tempo. Results also illustrate that foot-tapping may have caused more stops or pauses during the rhythmic sight-reading process. One can only surmise that if subjects are aware of a pulse (by tapping their foot), they may be more cognizant of rhythmic placement coinciding with pulse and beat placement.

Future research might focus on using a metronome throughout the sight-reading process to investigate how it may assist tempo fluctuation. It may also be beneficial to examine data similar to these with regard to whether the subject normally taps his/her foot or not. It could be easily hypothesized that adding a new kinesthetic response might be different than removing one that has previously been there, and might therefore have an effect on rhythmic performance depending on condition.

The results of this study represent the performance skills of sixty individual students of differing levels and backgrounds and are not intended as generalized statements representing all instrumental performers. In future investigations of this nature pre-test data should be collected that would help identify individual similarities and differences so more substantial conclusions may be drawn. Continued research utilizing varied situations and with different levels of performers should explore further the relationship between foot-tapping and instru-

mental performance. Music educators should give these findings some consideration as well as investigating other studies and methods that will help devise effective instructional strategies and pedagogical tools for teaching sight-reading skills.

Instrumental music educators may need to exercise caution when stressing the importance of foot-tapping. From this research, it is unclear as to whether foot-tapping may be an effective aid in sight-reading rhythms correctly. However, if the primary concern of the music educator is to focus on tempo stability, then foot-tapping may prove to be a beneficial tool.

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Implementation of Constructivist Techniques into an Online Activity for Graduate Music Education Students

Dan A. Keast, PhD
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July 2004
Committee Chairperson: Wendy L. Sims

Dissertation Abstract

The purpose of this study was to investigate constructivist principles used for online teaching and learning in various fields of education, apply them to an online activity for a graduate music education course, and assess how effectively participants achieved the learning objectives and how they used the materials provided online to construct knowledge about the assigned content.

Students enrolled in an existing face-to-face graduate music education course ($N = 8$) completed an online research assignment culminating in an individual presentation. A pre-survey was given to assess students' knowledge of technology I had planned to use in the web environment and a post-survey ascertained what technology they used to research and create their presentations. A grading rubric completed by two independent scorers was used to evaluate the students' presentations. All online activity was tracked and logged for pages opened and time spent.

Participants' presentations scored higher than required for the assignment; therefore, the activity was moderately successful. Spearman correlations were used to analyze the relationships between scores of presentations and activity gleaned from the tracking logs, and no significant relationships were found. Implications for designing online music education activities and suggestions for further research are provided.

The Effect of Using a Two-String Teaching Method versus a Four-String Teaching Method on the Performance of Beginning Fourth Grade Orchestra Students

Ronna Adema Koepp, MME
University of Missouri – Kansas City
May 2004
Committee Chairperson: William E. Fredrickson

Thesis Abstract

The purpose of this study was to determine the effect of two-string versus four-string instruction on the performance of beginning string students. Students were given 6 tests to determine note naming, sight reading, and performance skills on two- and four-string pieces.

Group A was taught using only the D and A strings at the beginning of instruction and later other strings. All the fingers were learned on one string at a time, starting with D. Group B was taught using all four strings from the beginning. First finger was first and taught on all strings, then the others followed.

There was no significant difference on four tests. On the two-string note naming, it seems that students receiving two-string instruction had an advantage on naming notes in a two-string piece. On the four-string sight reading test, it seems that students receiving four-string instruction had an advantage sight reading a four-string piece.

The History of the Cape Girardeau Central High School Band Program: 1924-2004

Joshua C. Lamar, MME
Southeast Missouri State University
August 2004
Committee Chairperson: Carol McDowell

Thesis Abstract

The purpose of this study was to investigate the development of the Cape Girardeau Central High School Band Program from the high school's inception in 1912 to present day. Data utilized in this study were collected from personal interviews, yearbooks, and other historical documents from the personnel files at Southeast Missouri State University and Cape Girardeau public schools.

The band program was initiated in 1923 by the female orchestra director, Frieda Rieck. Ms. Rieck, known for her great impact on the orchestra program at Cape Central, created the band program while maintaining her orchestral duties. After 2 years, Ms. Rieck gave to the band to her assistant, Mr. Leo McKinney. The band program had three different directors during its first 7 years - Frieda Rieck, Leo McKinney, and O. L. Wilcox, until William Shivelbine arrived in 1931.

The study revealed that William A. Shivelbine and Raymond F. "Peg" Meyer greatly influenced the band program in Cape Girardeau. "Peg" Meyer was not only influential in providing instruments to the youth of Southeast Missouri, but also provided private instrumental instruction. The band program's enrollment increased significantly under Mr. Shivelbine's direction. Band directors following Shivelbine's tenure, as well as new instrumental ensembles and changes to the band program, are also discussed.

The Effect of Movement-Based Instruction on the Beginning Instrumentalists Ability to Sight-Read Rhythm Patterns

Melissa Christine McCabe, MME
University of Missouri-Kansas City
May 2004
Committee Chairperson: William E. Fredrickson

Thesis Abstract

The purpose of this study was to investigate variations in ability to sight-read rhythm patterns between beginning middle school instrumentalists who participated in movement-based instruction and those who participated in traditional rhythm instruction. The study used a pretest, posttest control group design in which 81 subjects participated in rhythm training for 15 minutes per day for 18 weeks. Control groups were not allowed to use bodily movement to mark the beat or clap rhythm patterns during training. Experimental groups were asked to use foot tapping, clapping, and conducting gestures in their rhythm training.

Data collected from the 81 subjects were analyzed using Analysis of Variance and Newman-Keuls Multiple Comparison Procedures. Results showed that both groups' mean gains from pretest to posttest were significant. However, the experimental group's scores on the criterion measures were significantly greater than that of the control group.

Investigation into the Reasons Students Stay in Band

Amy Steinkuehler, MME
Southwest Missouri State University
May, 2004
Committee Chairperson: Norma McClellan

Thesis Abstract

Retention is a major concern among high school band directors. The purpose of this study was to discover the reasons graduating high school band members chose to stay in band. It is a fact that students will drop out of band programs, but is there a way to limit the overall number and frequency of the dropout rate? Students presumably would not drop band arbitrarily. There is a need to investigate the reasons students stay in band to perpetuate successful band programs. Retention can be addressed in many ways, but the intention of the researcher was to investigate the problem from a positive viewpoint. Therefore, the research sought to discover: What are the reasons students choose to remain in band program until they graduate high school?

Forty-seven senior band members from the Southwest District of Missouri were surveyed to determine their reasons for continuing in their band programs, and to see if those reasons could be applied to future band students to keep them from dropping out. Data were collected using a researcher-designed survey using a Likert scale, then analyzed by frequency of response and percentage.

Results indicated that nearly all subjects liked their band director and enjoyed their experiences in band. Results also indicated the subject's desire to continue on with band after high school, and that many desired a career in music.

NEWS BRIEFS

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FEATURE ARTICLES

The History of Jazz Education: A Critical Reassessment	Kenneth E.Prouty
Eugene E. Davis: Musician, Educator, and Entrepreneur	Eugenie Burkett
The Phoenix Indian School Band, 1894-1930	Greg A. Handel & Jere T. Humphreys
Women's Participation in the NEA Department of Music Education, 1884-1925	Sondra Wieland Howe

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INFORMATION TO CONTRIBUTORS

The editorial committee welcomes contributions of a philosophical, historical, or scientific nature, which report the results of research pertinent in any way to instruction in music.

Manuscripts should be addressed to Carol McDowell, Editor, Missouri Journal of Research in Music Education, Music Department, Mail Stop 7800, Southeast Missouri State University, One University Plaza, MS 7800, Cape Girardeau, MO, 63701. Four copies of the manuscript must be submitted and must conform with the most recent style requirements set forth in the PUBLICATIONS MANUAL for the American Psychological Association (APA, 5th edition). For historical or philosophical papers, Chicago (Turabian) style is also acceptable. An abstract of 150-200 words should accompany the manuscript. All figures and tables should be submitted camera ready.

Manuscripts are reviewed by the editorial board in a blind review process. To assure anonymity during the review process, the author's name and affiliation should appear on a separate cover page only. Authors are also requested to remove all identifying personal data from submitted articles. The collective recommendations of the reviewers determine whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

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