

**A STUDY OF THE IMPACT OF ELEMENTARY GENERAL MUSIC CLASSES  
ON TCAP SCORES FOR THIRD AND FOURTH GRADE STUDENTS**

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To the Graduate Council:

I am submitting herewith a field study written by Joseph Fred Jerles entitled "A Study Of The Impact Of Elementary General Music Classes On TCAP Scores For Third And Fourth Grade Students." I have examined the final copy of this field study for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Educational Specialist, with a major in Supervision and Administration.


  
Dr. Don Luck, Major Professor

We have read this field study  
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A STUDY OF THE IMPACT OF ELEMENTARY GENERAL MUSIC CLASSES  
ON TCAP SCORES FOR THIRD AND FOURTH GRADE STUDENTS

A Field Study

Presented for the  
Educational Specialist  
Degree

Austin Peay State University

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Joseph Fred Jerles

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## ABSTRACT

JERLES, JOSEPH FRED. *A Study Of The Impact Of Elementary General Music Classes On TCAP Scores For Third And Fourth Grade Students* (Under the direction of DR.DON LUCK).

Many experimental studies have shown the effect that specialized programs of music study have on the progress of students in other subjects. This study focused on whether a gross measure of time in music class would correlate significantly to scores on a standardized test. The study measured whether the time in general music classes can be correlated with scores in reading, language, mathematics, science, and social studies on the Tennessee Comprehensive Assessment Program (TCAP) tests given annually in grades K-12. The 3<sup>rd</sup> and 4<sup>th</sup> grades were chosen due to the requirement in most schools that all students in those grades receive instruction in general music classes.

Data was gathered via a survey sent to 45 elementary public schools in an area encompassing six contiguous counties. The survey requested a report on the number of minutes per month that general music classes were scheduled during the previous academic year. These surveys were paired with the general school-wide TCAP scores in the academic subjects and a Pearson correlation coefficient was calculated for each subject area. The r-squared test was

performed for probability of effect of the variables upon each other. Confidence was assessed at the 95 percent level.

The null hypothesis was accepted on all levels. No correlation was above the computed minimum to show a significant correlation between time and scores. Conclusions were drawn that a more detailed experimental study may show the collateral learning effect of music upon knowledge in other academic subjects.

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## CHAPTER 1

### INTRODUCTION

The impact of the Arts in education has been a point of focus in many recent debates. Many educators agree there are a multitude of benefits to be gained from arts education. Polls show that a large majority of Americans still value arts education as significant to the total education of a child (Harris, 1995). However, when School Boards are pressed to find ways to reduce already minimal budgets, the arts often suffer the largest cuts. Consequently, arts educators and proponents have been forced to demonstrate and quantify the impact of the arts on the overall growth and development of students. Increasingly, it is shown that the arts transform the learning environment into something larger, something wider, and also something more visceral (Fiske, n.d.). Many studies have been focused on arts programs using identified exceptionally talented students. Other experimental studies have gauged the impact of special programs on students from a wide variety of socio-economic backgrounds. All show significant and unique gains in the overall intellectual growth and creative development. Higher order thinking skills and critical evaluation skills increased when a



specialized program involved Artists in Residence classes. Highly functioning, talented young people grew to even higher levels of ability on six key factors--among them, artistic expertise, clear thinking, and enthusiasm (Fineberg, 1995). All generally agree that studying the arts leads toward the development of a more fully functioning, more self-actualized student who will then become a better citizen in our society. In a recent survey of parents, an average of more than 90% expressed the view that when children get involved in the arts, they become more creative and imaginative, feel more accomplished, learn to communicate better, and become more appreciative of other cultures (Harris, 1996). In 1994, The United States Congress, in passing the *Improving America's School Act of 1994*, firmly indicated their support of the arts: "The Congress finds that the arts are forms of understanding and ways of knowing that are fundamentally important to education" (Improving, 1994).

Nonetheless, whenever economic pressures force systems to reduce expenditures, the Arts are often considered an area that is expendable. In reaction to such pressures, there are many studies seeking to emphasize the importance of the arts in communities and within schools. It is often considered that "Art for Art's sake" is a phrase used only

in higher education or in elite, specialized institutions. Those who are uninitiated in the arts often miss the importance of the study of drama, visual art, and music. There are positive effects on the overall improvement of a student's abilities to reason, to be creative in decision-making, and to become astute in evaluating their own work and the work of others (Catterall, Chapleau & Iwanaga, 1999). Moreover, the discipline that one must have in order to study the arts has broad-ranging implications on every aspect of a student's future life (Darby, 1992). Finally, such benefits, while important and long-range, are not easily seen or measured. Many of these benefits develop over long periods of time. This slow development of the effects should indicate to our society that the arts should be a part of a student's education from the earliest years of life. The sooner a student is exposed to the arts, the larger the impact on the student's life as an adult (Catterall et al, 1999).

The benefits to be gained from the study of the arts have been shown to affect a students' knowledge on core subjects to a significant point (Fineberg, 1995). Many studies have shown there is a gain in the students' overall knowledge by the time they reach the high school level (Kelstrom, 1998). This study focused on discovering if

there is any relationship between the time spent in elementary general music classes and the scores on reading, mathematics, science and social studies on the Tennessee Comprehensive Assessment Program (TCAP) tests. If there are reductions to arts programs, it is imperative that the citizenry understand the full impact of those reductions on the lives of the children affected as well as the future of their community.

#### Statement of the Problem

This study posed the following question: Is there statistical evidence to support a correlation between the minutes spent by third and fourth grade children in general music classes and their scores in reading, language, mathematics, science, and social studies on the TCAP tests?

#### Significance of the Problem

There are several significant studies supporting the impact on the lives and decision-making processes of those who study and participate in the arts programs (Trusty, Jerry & Oliva, G.M., 1994). A broad area of study remains as to whether there are particular programs that have such impact at an early age. This study sought to identify whether, taken in gross form, the effect of class length



alone in general music classes was sufficient to generate significant results. If the result showed there was some type of positive correlation, further study might validate reasons to encourage school systems to add, retain, or lengthen music classes provided for their students.

The following are examples of collateral learning that may be increased through the study of music:

- The reading of lyrics, especially repetitive, foreign, and unusual words may help to increase vocabulary and comprehension (Hurwitz, 1975; Merrion, 1981).
- The study of the mathematical relationships of notes, time and meter can increase a child's understanding of grouping, subdivision, and algebraic substitutions and functions (Cheek, 1999).
- The broad study of social and cultural differences related to music can increase a student's appreciation and understanding of the growing multi-cultural aspects of today's society (Kelstrom, 1998).

-- The scientific study of vibration and the production of music tones could help increase a student's understanding of the scientific principles involved (Gardiner, Fox, Knowles, & Jeffery, 1996).

All of the skills above are addressed in the Tennessee State Curriculum Requirements for elementary general music classes. Unfortunately, they are not studied in all schools. Some school systems in Tennessee have not added a general study of music to the elementary curriculum. Further, recent budget reductions and subsequent cuts in programs have forced some school systems to take advantage of this missing compulsion in state education regulations. Neither the state regulations nor the Southern Association of Colleges and Schools require states to have elementary general music classes for certification. By doing so, the impact of this absence is not truly understood by many of the general public. However, more and more educators ascribe to Gardner's division of learning types (Gardner, 1993). They understand that musical development is as significant as that of mathematics in the total development of a fully educated child.

### Research Question

Is there statistical evidence to support a correlation between the minutes spent by third and fourth grade students in general music classes and each school's average score in reading, mathematics, science, and social studies on the Tennessee Comprehensive Assessment Program (TCAP) test? Has the effect of the collateral learning gained during the study of music been sufficient to show a significant relationship as early as the third and fourth grades in the population studied?

### Hypothesis

There will be no significant statistical correlation between the minutes spent by third and fourth grade students in general music classes and the scores on the TCAP tests.

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Collateral learning -- The learning acquired during the study of one subject that can be applied to another subject area. For example, reading lyrics in songs can increase vocabulary, which can improve reading in other areas.

Kodaly -- (Pronounced KO-die) A philosophy of teaching music developed by Hungarian composer and educator, Zoltan Kodaly. It is taught in most music schools and used extensively throughout the United States and Europe.

TCAP -- The Tennessee Comprehensive Assessment Program test administered annually to all public schools in Tennessee. Scores were retrieved from the State Department of Education website listing TCAP scores for each school. Each school's composite score on reading, language, mathematics, science, and social studies were used.

### Limitations of the Study

This study was limited to third and fourth grade elementary students in public schools in six contiguous counties in Tennessee. The area consists mainly of middle and lower-middle socio-economic level families, with a small percentage of upper-middle income level families in each county. However, since this generally reflects a large segment of the general population of the southern United States, the data results may be relevant to a larger population study.

## CHAPTER 2

### AN OVERVIEW OF RELATED LITERATURE

Alexandra York, in her address to the Center for Constructive Alternatives, Art and Moral Imagination, encourages all educators to "incorporate art education into the mandatory school curricular ... because only art educates the whole person as an integrated individual: it educates the senses, it educates the mind, and it educates the emotions. It educates the soul" (York, 1998). Music education is fully directed toward the improvement of the quality of life, to allow the entire quality of a human to be revealed by an encounter with music in all of its forms (Colwell, 1992).

In the first five nationwide telephone public opinion surveys over nearly two decades regarding the arts in education, nearly nine of ten persons surveyed said that exposure to the arts was significantly important to the total development of children. Sixty percent of the more than 1500 persons surveyed indicated that it was, indeed, very important. Two-thirds listed the study of the arts as important as other core academic subjects (Harris, 1995). Nonetheless, it seems the reality of arts education does not always match what is apparently desired.

Music is an integral part of the life of most children. The earliest memories of children are often of music, from nursery rhyme to lullaby. Often, music is connected with other disciplines as a means of learning other things (Chang, 2000). What is commonly known as the "Alphabet Song" is most often the way young American children learn the names and sequence of the alphabet. Nonetheless, a new cross-discipline route has been breached: Music helps learning in other areas (Cheek, 1999; Darby, Jaye T. & Caterall, James S., 1994; Fineberg, 1995). Once the child reaches school age, this music is often incorporated into their general curriculum; however, many view this as done weakly and poorly. Music curricula and other academic subjects are often not correlated or coordinated to maximize cross-curricular learning (Fowler, 1992; Sylwester, 1998).

In *Champions of Change* (Fiske, n.d.), there are numerous studies cited that show the impact of learning among those who have already chosen to study music. Using students from a variety of socio-economic strata but with similar abilities, it was shown that those who studied music also gained successively higher levels of proficiency in mathematics, with wider gaps among those students in lower strata, indicating some relationship between the



study of music and success on standardized tests in mathematics. What remains to be proven in the studies is whether the motivation necessary for intensive study of music is also the motivation for the study of mathematics, or whether there is actual causation from the study of music.

In his defense of the necessity of the arts in American educational systems, Sylwester (1998) pointed the blame toward us. "Part of the explanation may lie in the current push for increased school efficiency and economy. Good arts programs are not *efficient* ...Educators have had to continually justify arts programs, but not algebra or spelling" (p.31). Fowler's emotional article suggests that arts educators are the ones who must initiate the changes if the arts are to reach a stronger position in education and society.

Arts education has become a topic of many of societies leaders. From college Dean to Chief Executive Officer, they often call for increased education in the arts (What They're Saying, 1997; What Are They Saying, 2001). An important recent federal study, the National Assessment of Educational Progress, focused on the arts in its 1997 nationwide study of eighth-grade students (Persky, 1998). The results were mixed. While most students showed a

working knowledge of music, there were racial, economic and location differences in the responses. Persky points out that these differences do not alone invalidate the study. They do indicate that such a large study has a great deal of individual factors in its limitations. Interestingly, the role of parents in their child's success showed to be significant. Higher levels of parental education were associated with higher levels of student performance in the arts assessment.

In these changing and increasingly evidence-oriented educational times, the arts programs do not fare well. Budget pressures often look to the arts programs for places to cut funds, thereby depriving whole segments of our future citizenry of a critical development of certain aspects of their intellect (Gardner, 1993). Consequently, music and arts programs are called upon to show their effectiveness and relevance (Kelstrom, 1998). Kelstrom points out that two measures are often used as indicators of academic achievement--grades and standardized scores. Yet, the subjective nature of music and the arts does not easily lend itself to the impartiality of a grade.

There is strong evidence that the music education program must be integrated into the general curriculum. Kelstrom (1998) indicated that the public must be made

aware of the financial, academic, and aesthetic merits of having a music program. Other studies sought to show that the longer they attended music programs, the higher their achievement when compared to non-music students (Robitaille, 1981). Self-concept and its relationship to arts programs was validated in Trusty and Oliva's review (1994) of several studies involving targeted arts programs. Their caveat to the review was that it was not clear if the positive self-concept came before or was created during the arts programs. In either case, what was concluded was that a measurable and increased positive relationship between self-concept and participation in the creative arts was in evidence.

Darby and Catterall's article (1994) cites several significant studies demanding that the arts become the "fourth R" in education. Their review of other studies indicates that the arts have indeed become an integral part of education. Increasingly, persons not directly concerned with music education were recognizing the importance of music and its positive effect in the overall education of children (Darby, 1994). Their assessment of the learning experience in school is directly related to feeling successful in some part of the educational process. "The arts, by encouraging many forms of expression, can play an



important role in promoting these types of successful learning experiences" (p.311).

The case for arts literacy is stressed in several studies. Longley (1999) urges persons to take advantage of a strong arts program. He insists that national leaders can and must restore the severely depleted arts programs in many areas in the United States. The article, summarizing a year working on the Presidential Committee on the Arts, left Longley no closer to defining exactly what was "arts literacy" except to say that we must work toward it. Those who have studied Gardner's (1993) theories on multiple intelligences understand the clear separation of music intelligence, yet the vast interconnections between all the learning processes.

Specific studies relating to curriculum content have also shown results that indicate connections. Chang (2000), in a sixty year historical review of studies on the arts and reading, divides the findings into three contradicting groups: one showing a connection between the study of music and reading, another showing no relationship, and a third showing that other factors are far more significant in learning to read. Chang indicates that the majority of studies in the review are remarkably inconsistent, indicating much further study is needed. In the summary,



Chang indicates a longer period of music training might show a positive effect, revealing a bias toward music having a positive effect. This bias and the many reviews showing positive effects led this research to focus on the amount of time that music is studied in the elementary schools. The lack of clear-cut evidence indicating the importance of music education on the student population as a whole is revealed in the 1997 National Assessment of Educational Progress (1998). Cassidy's overview (2000) of a nationwide study of eighth grade students indicates that all programs should be more effective in teaching music. The results of the study indicate only moderate to poor performance of students in music skills. However, the limitations of the study to one grade and the cost to expand the study beyond its ten million dollar expense are significant factors clouding the issue. The next study on the effects and progress of music education is planned for 2007.

In a paper presented to the International Reading Association, Merrion (1981) stressed the parallels between the learning of music and the learning of reading. Evidence presented showed strong connections between such things as rhythm in reading and music, variability in pitch in

singing and reading aloud, and the effective use of music in acquisition and retention of language arts skills.

Many musicians understand the mathematic relationship that exists in the notation and performance of music. Cheek and Smith (1999) studied the skills gained and concepts developed in this respect. Their goal was to validate the relationship between the study of music and the learning of mathematics. There is a close relationship in the appearance of a musical time signature to math fractions. The study however showed no significant correlation between fifth grade students who had received private music lessons and their mathematics scores on a standardized test. However, one segment did show significance: Those students who had private lessons in keyboard instruction did better than those who had private lessons on other instruments. Cheek's study (1999) suggests there is a "threshold of exposure" (p.761) at which the benefit of music study is maximized.

A significant math gain was shown in a study among high school students of identical abilities. The group that studied music outscored the control group and continued to gain at a faster rate than the control group students (Catterall, Chapleau, & Iwanaga, 1999).

Gardiner et al. (1996) reinforce Cheek's opinion.

Their article summarized a study involving first grade students. The students showed significant improvement on a standardized test after seven months in a music and visual-arts program. Sequenced skill development in the arts was emphasized in the experimental group, as opposed to a standard program in the control groups. The majority of those students in the experimental group who started the program below the level of most of the control group caught up in reading skills and was ahead on mathematics.

There are more effects derived from the study of music than the easily quantified skills. Wallace (1998) attempted to study the emotional significance of the study of music among second to sixth grade students. Those in the study who received education in the arts seemed to be more able to express and accept their feelings as well as the feelings of others. Further, they were better able to trust others and accept differences among their peer group. Wallace concluded that arts education promotes a stronger sense of self-awareness and self-confidence in children, allowing them to make better decisions and be more creative in arriving at solutions than those who did not study the arts.



Having focused on music relative to other programs, there was a significant study involving the music curriculum and a specific method of musical training, the Kodaly system (Hurwitz, 1975). Primary grade children using the Kodaly method of music study showed the group performed more effectively on both temporal and spatial tasks than the control program. Further, this effect was made more significant by a pretest using the Metropolitan Achievement Test that showed no difference in the two groups at the outset. However, the average reading level for the experimental group was 87.9 percentile. The control group score averaged to the 72.3 percentile. The significant drawback of the study was that children who had no significant educational problems were selected for the study. It is not known how this method would affect those with certain disabilities or difficulties. Nonetheless, the symbolic nature of the Kodaly music instruction method seems to have a significant effect on most children's reading ability through the visual symbolism employed. Hurwitz indicates extensive work in children's neuropsychological functions and with both delinquent and learning disabled boys. This would tend to lend credence to the work being broadly significant.



That arts education in America is at ebb is true.

Fowler (1992), writing on the heels of the indictment from *A Nation at Risk*, still had a strong grasp of the need and the positive effect of arts education:

Through the study of music, we recognize the beauty of order. We respect the striving for perfection. We appreciate how all the elements--the details--make the expressive whole and how important those details are. And in the process, we learn how to handle frustration and failure in pursuit of our goals. You want a good product? Fill the assembly line with people who think like musicians. (p.77)

## CHAPTER 3

### METHODOLOGY

This study collected data from two sources: (1) a one-page questionnaire addressed to music teachers (or an administrative official) in 36 elementary schools in Tennessee, and (2) each school's average TCAP score on reading, language, mathematics, science and social studies from the same time period. The scores were retrieved from the State of Tennessee Department of Education website which lists TCAP scores for all schools in Tennessee. The school year chosen was the most recent year for which TCAP scores can be acquired. A sample of the questionnaire is included at the end of this chapter.

Additional data were collected for purposes of identification and secondary analysis. This included the school name, the years of teaching experience of the teacher for the time period investigated, and the education level of the teacher at that time. If schools had no regular music classes scheduled during the period of inquiry, the respondent was asked to indicate this and estimate an approximate number of minutes for music. Schools such as alternative schools or magnet schools,

which are not considered as having a homogenous population,<sup>22</sup>  
were omitted from the calculations. Only public schools  
were included.

### Techniques of Data Collection and Analysis

The questionnaire was mailed to each school's music teacher or chief administrator with an enclosed, self-addressed, stamped envelope for ease of return. When each survey was returned, the data was recorded and a response record was kept in order to make sure as many schools as possible had returned the information. Contact by telephone or personal visits to schools that did not return the surveys generated the remaining information.

Because it was desired to discover if any relationship existed between pairs of scores, the method used was the Pearson Product-Moment Coefficient of Correlation ( $r$ .) The pairs of scores were processed to determine the correlation between the number of minutes per month that music classes are scheduled and one of the TCAP scores. The resulting pairs of scores for each school were processed. Comparisons and conclusions were drawn from analysis of the total data.

The resulting analyses of the data were evaluated in two divisions: per subject and per grade level correlation. Correlations for all scores in reading, language, mathematics, science and social studies were calculated.

The r-squared method was also employed to show any significant proportions that may exist. The r-squared result was multiplied by 100 to present an integer for comparison and calculation of significance of the findings.

#### Reason for Use of the Pearson Product-Moment Coefficient

The needs of the study dictated that some reliable comparison of the two sets of data was needed. Since the data are not pre-test and post-test, bivariate study was limited to using a coefficient, the Pearson  $r$ . This method allows for dissimilar units of measurement regardless of their point basis or limits. It is the raw comparison of the pairs of scores that yield the resulting coefficient. This number can vary between +1.0 and -1.0. The most perfect comparison is one that approaches +1.0. However, variances much smaller can be significant, depending on the degrees of freedom ( $N-2$ ) in the total population ( $N$ ). It is important to remember that, for example, a score of +0.6 is not twice as good as another correlation of perhaps



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+0.3. Individual scores cannot be compared in that manner. Each coefficient result must be studied in the absence of the others and analyzed only against itself. Its meaning can be determined only in regards to significance of its impact. The researcher should note that the  $r$  is reached without external influence. It cannot be used to indicate causation or purpose, only that there is or is not a relationship between the data pairs. Further study using careful control of variables would be needed to conclude an influence by one variable upon another.

### The $r^2$ Method Shows Strength of Relationship

A further analysis and additional information can be gleaned by assessing the square of each  $r$  score. The  $r^2$  method is used to determine the proportion of the total variability of one variable that can be predicted from its relationship with the other variable. It is, put simply, a measure of the strength of the relationship of the two variables. This method becomes significant on a different curve than the  $r$  and increases dramatically at the upper end, between  $\pm 0.7$  and  $\pm 1.0$ . Once the  $r^2$  is determined, comparisons of strengths of the relationships can be made between different pairs relative to the strengths, but,

once again, not to the correlations themselves. In addition, multiplying the  $r^2$  by 100 will yield a number indicating the percent of variability in one factor that may be caused by the other variable. If the number is extremely small, i.e., less than 20, it can be assumed that the relationship between the variables is very weak and therefore shows little or no relationship.

### Test for Significance

How significant is the result? Can the coefficients be construed as having a valid and significant result that has a less than 5 percent chance of being wrong? The table of significance was used to determine significance of the resulting number based on the size of the population (N) in the study. In this case, the resulting  $r$  had to be larger than  $\pm 0.32$  in order to indicate a significant relationship.

## CHAPTER 4

### RESULTS

#### Null Hypothesis is Accepted

In both grade groups, the resulting coefficients were all below the critical value of .32, indicating no relationship. The null hypothesis is accepted in all cases. Specifically, in the third grade scores, the largest  $r$  computed was 0.25, still below the 0.32 critical value. The closest areas were in reading and social studies.

The schools reporting on the survey varied in size from fewer than 300 students to more than 1000. Elementary grades for these schools generally included kindergarten through fifth grade. Of the 45 schools in the 6 county area, 80% (36) provided enough information to be included in the calculations.

Additional requested data was reported by too few to be calculated or reported for significant information. Many respondents were new administrators, new teachers, or teachers who had transferred to the current school from another location and had insufficient information on the previous instructor or class schedule.



Table 1

## STUDY DATA -- THIRD GRADE

TCAP Scores

3rd gr.

School #	Minutes	Reading	Lang.	Math	Science	Soc. St.
1	140	65	66	79	66	71
4	160	55	58	66	55	55
5	140	64	62	64	48	59
7	120	59	59	61	47	52
8	140	47	49	50	41	49
9	140	68	69	77	69	66
10	160	49	52	60	42	55
13	180	58	67	65	81	64
15	160	49	51	47	40	47
16	180	56	53	68	52	56
17	120	65	69	74	65	64
18	160	58	58	65	50	58
19	0	46	49	54	36	47
20	0	56	67	73	51	48
21	120	54	59	62	51	56
22	240	61	56	65	47	56
23	220	50	50	55	49	56
24	200	55	65	69	44	50
25	200	59	69	69	55	62
26	180	46	45	46	35	40
28	180	65	62	73	51	58
29	200	56	67	62	46	56
30	140	56	56	64	51	55
31	180	63	52	58	54	56
32	200	70	71	76	68	65
33	200	48	54	44	45	45
34	200	68	66	81	70	70
35	120	55	50	52	51	55
37	120	39	41	38	34	45
38	120	50	62	59	50	54
39	180	46	50	48	37	56
40	120	66	78	80	56	61
42	160	45	56	61	35	49
43	120	54	50	56	41	55
44	120	38	46	33	38	49
45	180	64	64	67	57	62
Correlation	$r =$	.2076	.0665	.0718	.1781	.2577
	$r^2 =$	.0431	.0044	.0052	.0317	.0664
	$r^2 \times 100$	4	0	1	3	7
df=34						
Is $r > .32$ ?		No	No	No	No	No



## STUDY DATA - FOURTH GRADE

## TCAP SCORES

4th gr.

School #	Minutes	Reading	Lang.	Math	Science	Soc. St.
1	140	63	68	69	69	70
4	160	49	50	55	50	54
5	140	63	66	71	64	64
7	120	59	66	71	59	61
8	140	54	55	56	55	61
9	160	64	62	66	71	73
10	160	49	56	59	52	56
13	180	55	59	62	56	66
15	160	50	60	67	59	59
16	180	62	71	69	63	68
17	120	75	74	83	68	77
18	160	66	58	62	56	65
19	0	55	59	58	48	48
20	0	51	60	71	66	66
21	120	55	54	71	67	67
22	240	53	48	54	50	53
23	220	61	66	70	59	67
24	200	56	65	58	59	58
25	200	59	64	73	63	65
26	180	49	61	57	59	59
28	180	52	58	65	59	55
29	200	52	60	71	50	55
30	140	56	72	70	63	60
31	180	55	59	74	64	61
32	200	56	60	72	61	60
33	200	49	50	48	48	54
34	200	62	62	68	67	66
35	120	61	63	57	59	65
37	120	42	42	51	35	45
38	120	52	50	49	52	56
39	180	49	48	44	45	53
40	120	56	60	56	59	59
42	160	41	34	47	41	42
43	120	64	68	63	54	70
44	120	42	47	61	38	45
45	180	64	69	68	62	68
Correlation	r =	.0312	-.0210	-.0274	.0254	.0364
	r <sup>2</sup> =	.0010	.0004	.0008	.0006	.0013
	r <sup>2</sup> x 100	0	0	0	0	0

df=34

Is r &gt; .32?

No

No

No

No

No

The fourth grade scores were similar in nature. All of the scores were below the critical level of .32 to indicate a definite relationship. Some correlations were slightly negative, but only very slightly so. They also were below .32, indicating the scores were negligible. The null hypothesis is therefore accepted. There is no relationship between the score pairs.

Note on both tables that schools number 19 and 20 indicated no minutes of music per week. In that county, there were no regular general music classes held for students in those schools.

## CHAPTER 5

### SUMMARY AND CONCLUSION

In the review of literature, music has been shown to be a positive, definite, measurable influence on students and their learning capabilities. This has been and will continue to be proven in many studies. The non-academic benefits of studying the arts are sometimes discounted. Teachers and those directly involved with the students often see them as extremely important. This researcher was curious to see whether, taken as a whole, there was a significant, measurable, relationship between the amount of time that students spent in general music classes and the students' scores on a standardized test. It was hypothesized that, although the effects were definite and cumulative, they were inconsequential to scores on standardized tests at the grade level studied. There are many benefits to be gained from the study of music, as shown by other studies. The gains in collateral learning do not seem to accumulate to a significant point that merely studying the time in class for third and fourth graders will yield a significant relationship. Further study may indicate that the cumulative effect can be more accurately

measured at a later age. To perform experimental studies on <sup>31</sup>  
the effect of general music on students' learning would be  
to deny some of them in the control group an opportunity to  
study music at all and would not be feasible or proper.  
This is a powerful reason for studying only the difference  
in music training programs, not the overall effect of music  
class.

### Design of the Survey

The information desired was relatively simple in  
format -- how long were students in regular music classes?  
Other data for purposes of general information and for  
sorting the data was sought on the survey, but returns of  
fully completed surveys was so small that the data could  
not be analyzed for any other significant information. Many  
teachers were new at the schools and were not able to  
respond on the other inquiries. Several schools had changed  
their schedule from the school year included in the study  
and new teachers didn't know the schedule of the previous  
teachers.



Once the surveys were designed, the area chosen was the county containing the researcher's university and the five contiguous surrounding counties along the state line. This offered a moderate mix of small-city and rural schools whose programs ranged from extensive to non-existent. County populations varied from over 100,000 in the central county that contained the university, to fewer than 35,000 in one rural farming county.

When the surveys were returned, the schools in the population were arbitrarily numbered for purposes of anonymity. The surveys were tallied in respect to the class lengths and then correlated with the TCAP scores for each school maintained on the Tennessee Department of Education website. R-squared and R-squared multiplied by 100 computations were also applied and analyzed for significance, probability and reliability.

In the table of scores (Table 1 and 2), some school numbers were omitted. Those schools did not return the survey. There were, however, several teachers involved in the study who immediately saw the value of the study, especially if it had shown a positive relationship. Many indicated on their returned survey an interest in the

outcome of the study, incorrectly assuming that other than <sup>33</sup>  
the null hypothesis would be the result.

### Suggestions for Further Study

It is the feeling of this researcher that there are still measurable factors that, when taken in gross form, can be used to demonstrate the powerful forces wielded by the methodical study of music on young children. There are indications from other educators that students who are in "strong" music programs also do better in other subjects, but determining the factors affecting those outcomes has been difficult. Many advanced music programs select students who are already advanced or socio-economically advantaged, thereby invalidating the outcome for extrapolation into the general population. There are factors such as these that have significant effect on a student's musical and scholastic abilities. For example, a single, measurable, socio-economic variable that can be correlated with success in school is the income level of the parents. Only in a fully heterogeneous mix of students can this factor be limited in its effect on a study.

One variable that may need to be disaggregated from the data in future studies is the experience level of the

teacher correlated with standardized test scores. Another would be length of time in the position and student scores. Perhaps a more significant factor would be finding a way to identify "strong" elementary music programs and compare the students versus "weak" programs. Defining how these programs would be identified will be a challenge for a researcher. There are several examples of "weak" programs that have a highly educated and experienced teacher while in other schools one may find new teachers who quickly develop a "strong" program of music experiences at their school. Still, the question remains: Is the collateral learning acquired in music class significant in its impact on the performance of students on standardized academic tests?

Choosing to study music variables in the upper grades has proven difficult. The students tend to specialize their studies as early as the sixth grade, limiting the capability of using a random, balanced group of children. In the middle school and high school grades, all students in a grade are not required to study music. Consequently, the only students who choose to study music further are those who are already advanced or encouraged by parents and friends, and who are also doing well in other subjects.

Many studies seek to measure the effects of particular programs or specific methods of study. It is this researcher's opinion that there are still undiscovered overall effects of the general study of music by young students that can and should be isolated and studied.

### Summation

The null hypothesis was accepted entirely, indicating that, on this particular study, the dependent variable studied had no relationship to the scores students received on standardized academic tests. The correlations computed were very small and the confidence very high that the computations were accurate for the general population. Further analysis of the data confirmed the non-existence of a relationship between the two variables studied by showing the lack of dependence of one variable upon the other.



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## APPENDIX



## FIELD STUDY QUESTIONNAIRE

from

Joe Jerles, Music Teacher, St. Bethlehem Elementary School,  
Clarksville, TN

## PLEASE ANSWER AND RETURN IN THE ENCLOSED ENVELOPE

This study is regarding the scheduled general music classes for  
THIRD and FOURTH grade students during the last academic year  
(2000-2001).

REMEMBER: YOU ARE ANSWERING ABOUT LAST YEAR'S SCHEDULE.

1. School Name \_\_\_\_\_ Elementary School.
2. School SYSTEM name \_\_\_\_\_
3. Person filling out this survey \_\_\_\_\_ position \_\_\_\_\_
4. Music teacher's education & experience level during that year. Check  
HERE \_\_\_\_\_ if unknown.  
  
BS/BA \_\_\_\_\_ MS/MA \_\_\_\_\_ +45(30 sem.) \_\_\_\_\_ EdS \_\_\_\_\_ PhD/EdD \_\_\_\_\_  
  
State Certified in MUSIC? Yes \_\_\_\_\_ No \_\_\_\_\_  
  
How many years had the teacher taught music by 2000-2001,  
including that full year? \_\_\_\_\_
5. How many minutes per month (4 wk period) were usually scheduled for  
general music classes?  
Example: 25 min. per week = 100 minutes per month.  
30 min. every other week = 60 minutes per month  
for THIRD GRADE \_\_\_\_\_ minutes per month  
for FOURTH GRADE (if different) \_\_\_\_\_ minutes per month  
  
Please do not add in time for special, band, honor choir or other  
added classes. If you had such classes in your school during  
2000-2001, CHECK HERE \_\_\_\_\_
6. If NO regular general music classes scheduled, CHECK HERE \_\_\_\_\_  
Please ESTIMATE the minutes per month that music class was held  
for 3<sup>rd</sup> and 4<sup>th</sup> grade. \_\_\_\_\_

Please use the reverse side to tell me of anything that may affect your  
answers. E-mail or call me if you have questions. I must have all  
surveys as soon as possible. The minutes per month will be correlated  
with school TCAP scores to discover any relationship that may exist.

RETURN OF THIS FORM INDICATES CONSENT TO USE THE INFORMATION REQUESTED.

Thank you so much for helping me with my field study.

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