

**Teachers Network Leadership Institute**

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**Reading, Memory, and Melody**

“Research Summary

**Question**

The songs a person learns in childhood may be remembered for all of the person’s life. Could learning songs that use the same vocabulary and sight words as curriculum reading material, influence reading development? While the obvious answer may seem to be yes, can this be proven in an ordinary classroom? What factors may influence this experience? Could learning songs that include the vocabulary targeted in curriculum reading material, have a measurable effect on the reading development of second grade students?

**Rationale**

The students in this study are designated Targeted Assisted Students under the Title One Federal Guidelines. The education of these students may have been hindered by poverty, learning English as a second language and/or a migrant lifestyle. I believe that every possible advantage to learning, that can help remediate education, should be provided in a classroom.

**Literature Review**

Contributions to the literature came from a wide range of domains including: Reading, Second Language Acquisition, and Neuroscience. Each area illustrated a different piece of the overall puzzle that explains how and why singing can have an effect on a student’s reading development: From the knowledge that we “must learn to read, before (we) can read to learn (Samuels, et al, 1999), to lowering the affective filter (Krashen, 1982), so that we are comfortable enough to participate, and understanding how “Melody and text can cue each other over long periods of time” by triple encoding a memory (Wallace, 1994), each discipline provides another avenue to reading development.

**Methodology**

Students were taught the words to and sang songs that summarized their anthology selections, as well as two to four other songs germane to the content of each selection. The songs were sung to accompanying recordings. We sang and read the lyrics before, during and after each selection of the anthology. We sang to practice calendar work, to memorize the Elements of Art, on rainy days, and at the students' requests, sometimes we sang just for fun. In the past, reading story summaries may have been met with groans from the students, but singing the story summaries was always welcomed.

While my research question was asked with regard to overall reading development, every song had an opportunity to extend language lessons. The lyrics were used to highlight, focus in and teach high frequency words, sight words, vocabulary, spelling, grammar, slang, and the use of register. Student generated talk about the songs also provided opportunities for oral language development. Social studies and science topics were included, all of which led to student prompted class participation, singing in our school's annual Talent Show. There were even times during self selected reading that I observed students reading lyrics from their song binders.

### **Data Collection and Findings**

Two groups of nineteen students were included in the study: A treatment group of students who were taught using the *study songs* and a control group of students, who while they sang other songs, did not learn any of the *study songs*. The students were assessed using my district's required assessments for fluency at the beginning and end of the school year. Using an assessment required by my site, students were also assessed for recognition of sight words, at the beginning of the year, and at the end of our second trimester. Additionally, a comparison of my district's second trimester summative test of twenty-three language arts standards was made between the two groups.

The findings showed a statistically significant difference in the rate of grade level reading fluency between the two groups, with the treatment group scoring higher than the control group. The students' sight word acquisition in the treatment group was acquired more rapidly than in the control group. Of the twenty-three language arts standards, including writing, silent reading, and comprehension, the difference between the groups was both varied and small.

### **Implications**

The implications are: Reading development and the rate of reading fluency can be greatly enhanced by including songs with specifically targeted language. Singing is an opportunity to practice oral language development that is welcomed by the students. This is especially important for students who are learning English as a Second (or third) Language. Memory is developed through a variety of experiences, including melody and song. The evidence shows that there is valuable educational benefit to including music and song in a comprehensive Language Arts Program.

**Policy Recommendations:**

Music, song, rhythm and rhyme should be included in any *state approved for adoption*, Language Arts Program.

Music, song, rhythm and rhyme should be a mandated part of English Language Development for Second Language Learners.

School district administrators should be informed as to the effectiveness of including music programs.

Even when not included as part of the state adopted curriculum, teachers should be given the time and resources to develop modest music materials to enhance the education of the students, and the facilitate the students' reading acquisition.

## Reading, Memory, and Melody

*What will a child learn sooner, than a song?  
Alexander Pope*

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June, 2009

## **Introduction**

In January 2008, I came across a booklet of songs that were, in actuality, summaries of the material in the reading anthologies of my second grade students. The summaries had been adapted to accompany tunes familiar in American Culture, such as *I've Been Working on the Railroad*, *Bingo*, and *Yankee Doodle*. Like many adults, I remember these and other songs that I learned as a child. The songs we learn in childhood just somehow stay with us. This led me to wonder what my students might gain from singing summaries of their reading materials. Would learning songs that use the same vocabulary and sight words as their reading material influence their reading development?

When school resumed after winter break, I was ready with a copy of a songbook and an accompanying compact disc (CD). During the last four months of the school year, my students sang vocabulary-rich summaries with great enthusiasm. Even my newest non-English speaking students sang along. Where rereading a summary might have been met with groans, singing the summaries was welcomed. My students were motivated to practice their new summaries as often as time allowed. The extra practice in oral language that singing provided may have contributed to their success in reading fluency.

Although I believed the academic gains of my students were influenced by their singing of the songs, was there empirical proof? Would very specific singing have a measurable effect on the reading development of my students? In order to explore this question, this paper focuses on reading development as related to reading fluency. I use my district required assessment and a list of 250 common sight words to measure reading

fluency. Sight word lists such as the Dolch list, or Fry's Instant Word List are used in virtually all school districts. Sight words are the most common words featured in English text. These words are found frequently in text, but many of them do not follow typical phonetic patterns. Since the words are not easily decodable, they must be memorized and read on sight. Three examples are the words: *said*, *put*, and *warm*. Reading sight words demonstrate reading fluency that is not based on phonetic decoding. Thus began a study, the results of which would hopefully go beyond the anecdotal.

### **Literature Review**

My study draws from literature in the fields of Reading, Second Language Acquisition and Neuroscience. Research in neurobiology revealed that music and melody have an effect on the recalling of text. "Melody and text can cue each other over long periods of time" (Wallace, 1994). This might explain why thirty years after kindergarten, one still remember the words to *Old McDonald*. What happens, according to researchers, is triple-coding: the brain encodes a single musical experience three ways at once. The first way is by encoding with a memory of the music; the second way is by encoding with a memory of the text; the third way is by encoding with a memory of the music and text together. In essence, one experience is stored in three ways, and this provides three ways to retrieve this information, which is learned as a single musical experience.

In looking for a specific area in which auditory and motor systems interact, researchers at the Massachusetts Institute of Technology found, that there was greater brain activity when phrases were repeated out loud or even silently mouthed, than when phrases were silently rehearsed by thinking of them (Hickock, 2003). Perhaps even those reluctant to sing aloud, may still benefit, so long as they mouth the words. Other neuroscience

researchers, using Magnetic Resonance Imaging scans, identified a “speech-defined area . . . robustly activated by melodic stimuli” (p. 679). Sing, and sing out loud, I say! People also remember better when an experience is within the context of strong emotions. Different types of memory and their respective brain systems, are activated by different stimuli including; “emotion and motivation” and “rewards and punishers” (Rolls, 2000). The implication for the classroom is that heightened emotions, whether positive or negative can influence learning and memory.

For some, just the thought of speaking out loud is distressing, and up goes the affective filter, as described by Stephen Krashen (1982), a noted researcher of second language acquisition. An affective filter is a type of defense mechanism we use to “filter” and present a response to new information. In an emotionally stressful environment, a person, whether 6 years old or 60, cannot learn well. Stress inhibits learning and for many children, school can be a stressful environment. Children begin each year in a different classroom, with a different teacher, and for the child, an entire set of new and unknown expectations. In my district, many students come to school speaking a language other than English, compounding their already heightened levels of stress. Teachers have to move quickly to help students lower their affective filters, and become receptive to learning. Singing, can help to create a happy and supportive environment, which in turn, can be a very effective strategy in helping children become receptive to learning.

Even when the words are unfamiliar, the melody and tempo of the music will convey feeling. In his book *This Is Your Brain On Music*, noted neurologist Daniel J. Levitan (2006) highlighted studies showing musical preferences from infancy to age eight or older were based in part on predictability. Children like simple music. Simple in this case

means music with “clearly defined themes . . . that resolve in direct and predictable ways” (Levitin, 2006). There is comfort for a child in having their expectations met in a way that is consistent and predictable, whether in song or classroom rules.

There is agreement among educators and researchers that students “must learn to read, before they can read to learn” (Samuels, Schermer, & Reinking, 1999). Reading fluency is *readily identifying words*, and therefore not having to spend time decoding the words. This skill must be developed in order for a person to attend to the comprehension and meaning of the text. “Practice is key . . . students need to become fluent or automatic in decoding to become skilled readers (p. 273). Songs, by their very nature, are to be practiced and sung again and again. One study of language and literacy (Hoshino, 2006) showed that a student “retelling” something they read was an effective strategy for acquiring language. In my experience, repeatedly singing a story summary, has been as effective as retelling a summary. The singing experience is one more opportunity to practice oral language development and thereby increase proficiency. “Fluency develops gradually over considerable time and through substantial practice” (Armbruster, 2001).

### **Context**

My school district is in the city of Santa Maria, part of the agricultural region on the central coast of California. The Santa Maria-Bonita School District serves 13,746 students, 10,300 of whom are identified as Targeted Assisted Students (TAS) under the Title One Federal Guidelines. Additionally, 55 percent of our students are English Language Learners (ELL). At my school site, 625 of our 842 students are designated TAS, and 52 percent are ELL. The educational challenges faced by our students are many and compounded under the weight of generational poverty, as well as limited literacy in the

home language. While language is not the only barrier to the education of local students, it is arguably the most salient for our public school system to address.

I hold a Masters Degree in Bi-Lingual/Bi-Cultural Education and am credentialed to work with English Language Learners, of which a high number are routinely assigned to my class. My professional goal is to learn and do everything possible to help my students succeed in meeting the standards required of them. I believe teaching time must be consolidated so as to use full measure of every minute. This means educators must develop teaching that goes well beyond thematic and where everything done in a classroom can benefit a child in more than one way. To achieve this goal, I look to research methods, techniques, and strategies that will help my students not only learn, but will awaken in them a lifelong joy of learning. I believe this study may further my efforts in this endeavor.

### **Methodology**

In this section, I describe the implemented intervention. Our state adopted language arts program has six themes with a total of twenty selections of various genres including fiction and non-fiction. For the purposes of this paper, I will refer to each selection as a story. For each story, I recorded a compact disc (CD) that begins and ends with a story summary in song format. The reason for beginning and ending with the summary song is that it brings the students back to the focus of our lesson. In her book *Teaching Smarter With The Brain In Focus*, Sarah Armstrong (2008) pointed out that, “Closure . . . reiterates what the student needs to know” (p. 44). Students “remember best what happens first and last” (p. 45). The students’ focus needed to return our story-summary song. Sandwiched between the recordings of the summary song were anywhere from two to four other songs

which related to the story and/or the theme. The song collections range from seven to nine minutes.

Each student was given a binder in which to keep lyrics. After the initial presentation of the anthology story, including the focused vocabulary, spelling, and high frequency words, the students heard the songs, and read the lyrics, which they then added to their song binders. There was generally student-prompted conversation about the new songs, which was welcomed as another opportunity to develop oral language. The next time the students heard the songs, we pre-read the words and highlighted those words specific to each particular story. Although the students did not highlight common sight words, I highlighted the sight words for demonstration. At least once with every theme, I showed them an example of how many common sight words were in a given song. The reason for this was that although singing was fun, the students needed to know there was an educational objective to be met. After that, the songs were sung three to four times throughout the week. We also sang to review a story. At the end of each theme, we sang all of the songs as a way to say good-bye to the theme. Several times throughout the year students asked to sing some of our old songs. This sometimes became a Friday afternoon activity. We also sang to emphasize a particular language arts standard, and when we needed to refocus and/or change our state of attention.

Additionally, to go along with our calendar work which is done on the first school day of each month, I made a collection of songs for days of the week and for months of the year. I also made a Rainy Day mix for indoor recesses. Even so, there were more days without singing than with singing. This was in accordance with the recommendation that a

judicious use of music be no more than 30% of instructional time (Jensen,1995). Inundating students with music may actually lessen the effectiveness (p. 213).

### **Data Collection**

There are five second grade classes at my school. One other teacher and I have the most similar composition of students, with the majority of students in each class being second language learners. He and I shared and compared our assessment data. His class was the control group and my class the treatment group. His class did not use any of the story CDs. However, his students did sing songs in other contexts such as during math and science. I also taught five of his students as part of an afterschool intervention program, but without using any music. In order to monitor student gains from the beginning to the end of the school year, I excluded from the data those students who enrolled after the second month of school. This left us each with data for nineteen students. We used the same district required assessments for fluency at the beginning and the end of the school year. We also used the same list of common sight words at the beginning of the school year and at the end of the second trimester. In many classrooms, (including mine in years past) students are taught to practice fast reading, and to use timers, in an effort in increase fluency. Neither class engaged in these practices during the study. Both my colleague and I looked at the effect of natural growth from reading instruction, and practice, as well as singing.

To evaluate fluency, an unpracticed passage of grade level material was read by the student. The teacher counted the total number of words read in one minute. Subtracted from this amount were any words read incorrectly, sounded out, or omitted. This resulted in a Words Read Correctly per Minute (WCPM) value. Table 1 lists the WCPM norms for oral

reading fluency for second grade. This is to give a reference for comparison to the students who participated in the study with grade level norms.

Table 1  
*Curriculum Based Norms in Oral Reading Fluency Grade 2 (Samuels, Schermer, & Reinking, 1999)*

	WCPM (Words Read Correctly Per Minute)			
	Fall	Winter	Spring	Expected Growth
75 <sup>th</sup> percentile	82	106	124	42
50 <sup>th</sup> percentile	53	78	94	41

The procedure was similar for sight words, except that the students were not timed.

I also compared the data from our California Summative Assessment (Houghton Mifflin, 2001) at the end of the second trimester.

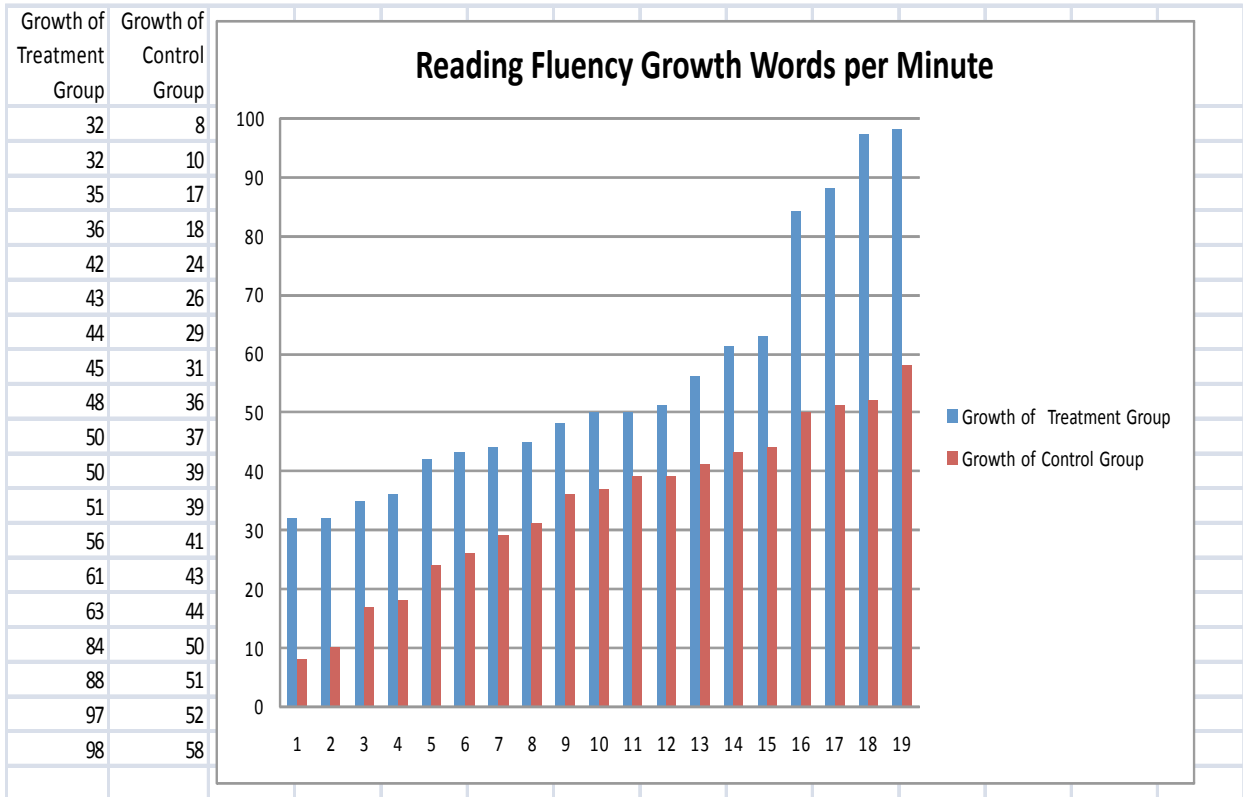
### **Findings**

An analysis of the twenty-three item summative test found our students to be very similar in reading (silently) and writing standards: of the twenty-three items, the Control Group scored highest on nine, and the Treatment Group Scored highest on thirteen. However, it should be noted that on ten of the items the difference between the scores was five points or less. There was very little difference in our respective scores. There was however, a *significant* difference between the two groups found in the assessments of reading fluency, as well as reading the list of common sight words.

Analysis of WCPM values showed a measureable effect on the reading development of the students in the treatment (singing) group. During the course of the school year, the average rate of growth in reading fluency for the treatment group was fifty-five words per minute. The rate of growth for the control group was thirty-four words per minute. Twelve of the nineteen students in the treatment group were above the mean, whereas only four of

the nineteen in the control group were above the mean of 44 words per minute. The scores graphed, represent the *growth* in the number of words read correctly in a minute (see Figure

1). Table 2 shows the averages for the two groups.



### 1. Reading Fluency Growth Words per Minute

Table 2  
*Reading Fluency Growth Averages for Two Groups*

	N	Mean	Std. Deviation
Treatment Group	19	55.53	21.222
Control Group	19	34.37	14.396

I performed an independent samples t-test comparing these two averages to see if there was a difference in improvement in reading fluency between the treatment and control groups (see Table 3). Findings indicated a statistically significant difference (p-value of .001) in reading fluency when comparing the reading fluency growth averages of the two groups of students.

Table 3  
*Independent Samples T-Test*

	t	df	Sig (2-tailed)
Reading Fluency Growth	3.596	36	.001

With regard to the Dolch List of common sight words, three of the nineteen students counted in the treatment group knew all 250 words when the school year began, and were therefore excluded from the count. Of the remaining sixteen students in the treatment group, fourteen knew all 250 words by the end of the second trimester. In the control group, only six of the nineteen students knew all 250 at the end of the second trimester. While Reading Fluently was the primary goal of repeated practice by singing, the influence of singing summaries was evident in other language arts areas as well and almost immediately.

Our first anthology story had a character that sat in a parking lot and ate all of the food that would not fit in his car. When writing about the story, one of my students referred to this incident with a phrase taken directly from the summary song, “In the parking lot, It was a lot.” The second story in our anthology included a little girl and her “granddaddy.” The word “granddaddy” was part of the refrain. One of my students included in her daily journal, a reference to her “granddaddy.” This would not be so remarkable, except for the fact that the student is learning English as her third language, behind Spanish, and Mixtec. Mixtec is the language spoken by the indigenous people of Oaxaca, Mexico. Neither Spanish nor Mixtec have a cognate or word that is similar in pronunciation, spelling and meaning, that would account for the child’s use of the word.

Even comprehension was influenced by the songs. My students were given a multiple choice comprehension quiz on one of the stories in Theme Two. I noticed that many of the students had made the same *wrong* choice. Therefore, I looked back at the text

of the story to verify the answer. The children were indeed choosing the wrong answer. In trying to analyze why this was so, I looked at the song lyrics. The students were making a choice about who left shells around a pond, based on the song lyrics, rather than the anthology text. This demonstrates that the children remembered the words of the song, better than they remembered the words read in their anthologies.

In addition to oral language and comprehension, there were many other opportunities for teachable moments including grammar rules. For example, songs on the first CD related to food. One of the songs used *eatin'* rather than eating. This offered the chance to show how an apostrophe can take the place of a letter, as well as the importance of pronouncing the final sound in a word. Dropping the final sound is very common among our second language learners, and so any chance to emphasize the final sound is helpful. This particular error was found in several songs. Each time one was found in a song, the students footnoted the slang word and its grammatically correct form, *eatin'* = eating. We also had a chance to talk about slang and register. Register is how your word choice differs when talking to a friend or talking to the principal. Singing even helped one of my students with a superlative. When I made the comment *I think Willi likes to sing*, he responded with “No, teacher, I don’t like to sing, I *love* to sing.”

Other influences from the singing included a student who proudly memorized and recited, in order, the final 14 lines of the song *The Green Grass Grew All Around*. A few of the songs were available in Spanish, or had some Spanish words. One song was especially moving to the students. The song is a child singing about memories of and love for a grandmother. The song was sung in English and in Spanish. The first time my students heard the song there was a collective sigh, and they spoke wistfully of their grandmothers.

The first comment came from a little boy who said, “Teacher, that song makes me want to cry.” He went on to talk of how he missed his grandmother who died before he was born. Other children talked about their grandmothers in Mexico, and other faraway places and how they hadn’t seen each other in a long time. Happy memories were also shared. This carried on well beyond the theme. When the time came for our school’s annual Talent Show, the entire class voted unanimously to sing the song, *Siempre Abuelita~Always Grandma*, (Hinojosa, 1999) for our families, and we did.

What was seen this year was that practice, practice, practice is how reading fluency is achieved. A classroom free of undue stress, where students work as a community, is the best learning environment. A combination of the two can result in significant learning, and all, for just a song.

### **Implications**

I would like to repeat this study, as well as expand the analysis of this study with a new group of students. First, to determine whether the results were an anomaly based on a particular group of students. Will there be similar results with other groups of students? Second, Can a program such as this, the influence of singing to enhance reading, have an effect on a much larger group, perhaps as many as 32 students? Second grade classrooms in my school district are each being filled to capacity, numbered at 32 children for the 2009-2010 school year. Finally, I would like to know: Is the effect for second language learners different than it is for children learning in their primary language?

The evidence shows that there is valuable educational benefit to including music and song in a comprehensive Language Arts Program. Across the state of California and our Nation, Music and Singing programs are being sacrificed in an effort to meet budget

demands. The cost of implementing a small program such as the one described herein is nominal when compared to the cost of the programs that have been cut, and I will continue to use singing, for educational gains in my classroom. Perhaps this is one small thing teachers can do, that will make a big difference for their students.

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