

Teaching Through Mnemonics in Elementary School Classrooms

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Abstract

Mnemonics and songs are used to help students excel and build on their knowledge in all content areas. This method of teaching and reinforcement of information helps students to commit new information to memory and continue to use this material throughout their lives. Using mnemonics is a lesson's way to teach and make the classroom a unique learning environment.

Music is being cut in many schools across the nation. Music is a cohesive way to teach the state/federal required standards in core areas as well as maintain a well-behaved classroom.

The purpose of my study is to describe the effectiveness of mnemonics within the classroom. Additionally, this study explores teacher use of mnemonics in an instructional environment.

Findings indicate that many teachers are interested in using mnemonics in the classroom. However, teachers report feeling uncomfortable about singing for their students.

## Chapter 1 Introduction

I can remember back to my second grade classroom. We were learning about the continents and knew that we had a “big” test coming up where we had to label all of the seven continents correctly. To ease our minds, Mrs. Ledbetter, my second grade teacher taught us a simple song. “Tell me the continents. Tell me the continents. Tell me the continents if you can. There is North America, South America, Europe....” As I sit back now, almost 20 years later I can still sing you that song, and you bet I can tell you my continents!

### Statement of Problem

There are not many teachers using musical mnemonics as a source to teach and supplement core content areas. Therefore, students are often not getting the experience nor the tools that mnemonics in the classroom provides.

Music, as is pertains to this study, refers to simple, catchy songs that reemphasize the main ideas and help students hone in on major concepts and commit topics to memory. Core content areas include; English, social science, mathematics and science. Music can be a helpful tool to enhance what students retain from the many content standards that they learn. These songs can shine a spotlight on main points and help students use this knowledge all through school, not just for a test.

### Purpose Statement

The purpose of this study is to find out why learning through mnemonics is effective in elementary school classrooms. In addition, I want to find out if current teachers have found success in using mnemonics in their classrooms. Additionally, this study looks to discover where teachers ascertain their mnemonics material to serve as a resource for others.

### Research Questions

Is musical mnemonics a valuable teaching tool in K-6 classrooms? Why does musical mnemonics work to encourage the retention and continued usage of new material in elementary students? What recourses are out there for teachers in order to incorporate music in their core content area lessons?

### Theoretical Rationale

According to Mastropieri, Sweda and Scruggs (2000) the educational reform of recent years has encouraged teachers to search and use strategies to help their students learn and commit new information to memory. In many cases teachers are turning to visual and auditory mnemonics. From the over 1,000 students studied, it was found that mnemonics are highly effective for recall in students with learning disabilities and those without (Mastropieri, Sweda & Scruggs, 2000).

Haynes and Canaday (1974) completed a study of 120 elementary age students, in grades 2, 4 and 6. For this study, students were taught 16 nouns and told to memorize those nouns. Small groups of students were also taught mnemonic devices that were appropriate for their age levels. The results from this study found that, “children who received mnemonic instructions showed superior recall to learn-only subjects.”

According to Wolfe (2001), “Memory is what enables us to learn by experience. In fact, memory is essential to survival.” Mnemonics is a way to help students do just that; survive. Survival in school is a key to students’ success, in class and with peers. By encouraging students to use mnemonics and commit information to memory teachers are essentially helping students to survive academically and socially.

Scruggs, Mastropieri, Berkeley, and Marshak (2010) express that since the 1980s more than 40 studies have been conducted with more than 2,000 test subjects looking at the effects of mnemonics as memory device and learning tools. Mnemonic devices of all varieties, “have been found to be extremely effective...” (p. 84). These long range studies have continued to show that music is a highly valid teaching tool and progressive way to teach a variety of students with various interests and learning abilities.

In summary, mnemonics were found effective and greatly helped many students to succeed in school. Mnemonics encourage students to stay engaged in class and commit the new information to memory.

## Assumptions

Prior to beginning this study, a critical look was taken at the assumptions surrounding the use of music in the classroom. The basis for my assumptions were gathered from the viewpoints of what the mainstream public and educators perceives to be the role of music in schools, as well as my own ideas. First, I feel that mnemonics do work in helping students to learn core content areas. I have entered into this research assuming that I will find positive data to support the use of mnemonics as a teaching tool. Secondly, I assume that most teachers/-educators are not opposed to using music in their classrooms, they just feel that it is out of reach and too labor intensive. Third, if teachers do use songs as memory devices for students, they use the same ones year after year and do not expand their songs, nor use any updated versions. Lastly, I have gone into this assuming that many people, both in and out of the education realm feel that music is “fluff” in schools; and not a valuable skill to spend time and money on.

## Background and Need

Yates (as cited in Scruggs, Mastropieri, Berkeley, & Marshak, 2010) the use of common mnemonics dates back to the Ancient Greeks. The concept of mnemonics as a teaching tool is not a new idea, simply a lost method. For centuries scholars have known that rhythm and melody were an effective way to reach their students and help to encourage continued use of knowledge. In our current school system we need to access these ideas

and bring mnemonics back into the classroom to support the teaching of state and federal core content standards.

## Chapter 2 Review of the Literature

### Introduction

There has been much research on the use of mnemonics as used within the classroom. My research addresses the matters of; why mnemonics work, strategies for using mnemonics as classroom management and evaluation of previously performed research on mnemonics.

### Historical Context

Mnemonics has been a topic of ongoing interest and research since the early 1900s (Mastropieri & Scruggs, 1991.) Most recently researchers have been evaluating how the brain functions and why certain methods are more useful than others for memory. Yet the use of mnemonics is not a new technique. Mnemonics were used back in the times of the ancient Greeks (Mastropieri & Scruggs, 1991). Long before the printing press, very few copies of books or pamphlets were available. Therefore, scholars were required to memorize books about their subject. The ancient and medieval scholars would read books aloud and commit the information to memory through rhythmic and auditory means (Danziger, 2008).

Much of the current debate surrounding mnemonics seems to stem from Howard Gardner's Multiple Intelligences, one of which is a musical intelligence. Gardner looked

at the way different people learn most effectively. Shapero (as quoted by Gardner, 1983) says, “[In} musical memory... a great percentage of what is heard becomes submerged in the unconscious and is subject to literal recall” (p. 102). These claims by Gardner and Shapero further support the need of teaching through music.

Mnemonics have been used effectively even beyond the classroom. They have been used for decades in advertising (jingles) to catch the attention of consumers of all ages. General Motors used the first known advertising jingle in 1905 (The Marketing Machine, 2011). These jingles proved to be such a strong way to get consumers thinking about, and therefore using a product, that we still see jingles constantly in television and radio ads today.

It has only been more recently that mnemonics has really taken center stage in the current educational system. Research has been done to find out how kids learn and if the use of mnemonics promotes long-term memory recall versus rote memorization.

## Review of the Previous Literature

### *Why Mnemonics Work*

The reasons the mnemonics work is not a simple answer. There are many levels and pieces, that put together, create a quilt answering the question; why do mnemonics work to aide in memory recall?

The first of which seems so simple, and yet is very complex. The reason mnemonics works is because of the brain. “Our body releases dopamine and norepinephrine during movement and fun activities [music]...Human studies show that these chemicals enhance long-term memory when administered either before or after learning” (Jensen, 2005, p. 709). The chemicals released in the brain when students are active, moving, singing and having fun, help to commit the subject matter not just to short term memory, but long-term memory. “[P]utting information to music or movement will help store it. Adding a strong emotional component may make the difference between forgetting and remembering” (Sprenger, 2005). Encouraging students to enjoy the subjects that they are leaning highly increases the amount of retention of material.

Committing information to long-term memory is also dependent on sending the information through multiple “pathways” (Sprenger, 2005). Pathways are described as paths for information in the brain to travel. The more pathways that new information is processed through, the more easily that information can be retrieved and used at a later date. (Sprenger, 2005). There are many types of pathways that are used in learning one bit of new information. Some of the major pathways used are the semantic memory, episodic and emotional pathways, with emotional being the strongest (Sprenger, 2005). All of these pathways can be triggered through musical mnemonics, creating a strong memory and more accessible recall of facts. The key in using pathways to their fullest potential is to use as many as possible in one lesson. Patricia Wolfe describes mnemonics as “creat[ing] links or associations that give the brain an organizational framework on

which to hook new information” (Wolfe, 2001, p. 179). The pathways are the outline for finding and using past information learned. Mnemonics create an environment where students are practicing new words and information, interacting with the classmates, and having a good time.

### *Classroom Management*

Mnemonics and songs are a creative way to encourage classroom management during transition times, as well as lessons. Teachers can create cues in order to help students use time in the most effective way while in the classroom.

Smooth transitions are very important within the classroom. “One of the most demanding cognitive requirements is to switch back and forth” (Davidson, Amso, Anderson & Diamond, 2006). Students have great difficulty just getting their minds to “switch” from one activity or lesson to another. Therefore, time is often wasted waiting for children to get out supplies, stop talking to their partner or a number of other activities. It is difficult to get students’ attention switched and thinking about a different topic. “Music and activities are excellent ways to influence or change the states of your students.... You can use certain songs to bring students back from a break and let them know it’s time to start up” (Jensen, 2005). Setting a time limit of a short 1-2 min song encourages speed and efficacy of transitions. Using these within an elementary classroom will allow for the most possible learning time.

Auditory learners would especially benefit from more mnemonics use within the classroom. Auditory learners learn best through hearing and talking rather than seeing or doing (Sprenger, 2005). These are often the students who can get bored and disruptive during visual presentations and hands on activities. The use of song, as in a transition, will catch the students' attention and bring them back to the present and ready to learn. These students would also benefit from singing and hearing the songs. This type of oral class activities will encourage these students' behavior and attention to be turned to the proper place.

Teachers can also use songs to teach and reinforce classroom rules and expectations. In Tiffany Hunter's first grade classroom she did just that. Her students were taught a simple process of conflict resolution through song and hand gestures, which outlined three easy steps (cool down, talk, solution) for solving a problem with a classmate (Hunter, 2008). Instead of reinforcing these expectations by getting mad at the students or having a poster in the room, students could remind themselves by simply singing the song. This song helped students to act swiftly and independently to solve their peer problems. Students were able to "develop the skills needed to live and work constructively and peacefully with others" (Hunter, 2008, p. 58), therefore allowing for more time for new learning to take place, rather than the teacher's and students' attention placed on conflicts.

Students are most engaged and learning the most when they are involved.

“[R]esearch confirms that engagement activates more of the pleasure structures in the brain than do tasks of simple memorization” (Jensen, 2005, p. 35) More attention to the learning also usually means better results (Jensen, 2005). Mnemonics are a great way to give the students control over what they are learning. Students can create their own songs or chants based on the subject being covered in class. Allow student time for presentation and use of these songs throughout lessons. The students will feel a sense of autonomy and ownership of their education.

#### Previous Research

Mnemonics has been a vital topic of study in memory techniques, as well as education, in recent decades. In *Music Enhances Learning* (Campabello, De Carlo, O'Neil, & Vacek, 2002) a Master's Action plan, three school sites, and students in three grades (Kindergarten, 2<sup>nd</sup> and 5<sup>th</sup>) were taught six grade level appropriate songs. Students were tested for prior knowledge before learning the songs and grasp of information after. In addition, questionnaires were given to parents and students concerning the importance of music in the classroom, students kept journals of their learning and researchers observed the students. Across the grades there was a jump in information learned and retained after learning the six songs. Authors noted in their conclusion that, “it is apparent that music is a powerful force that makes difficult material easier to learn and remember within a short period of time” (Campabello, De Carlo, O'Neil, & Vacek, 2002, p. 66). It was clear, not

only by test scores, but also student reactions that the music was making a strong impact on learning. “They [students] sang during the entire bus ride on a recent field trip... They now expect to learn a song for any unit we study” (Campabello, De Carlo, O’Neil, & Vacek, 2002, p. 53). Students were excited about their learning and with the introduction of music they were literally asking for more songs. Researchers also noted, what they called “interesting facts” during their classroom observations. Some of these include: “all children appear to be interested... quietest students are beginning to sing with enjoyment... even Spanish-speaking students are engaged” (Campabello, De Carlo, O’Neil, & Vacek, 2002, p. 51). The mnemonics used in this study boosted student knowledge of the subjects, increased student attention, but also the perceived importance of music in school.

In another study conducted by a graduate student/teacher, Orla Hayes, mnemonics were taught to various age groups of students. These songs focused on what the students were learning and consistently struggled with (Hayes, 2009). In this study students were taught songs about information that had previously given them trouble; 5<sup>th</sup> graders learned the parts of the brain, 3<sup>rd</sup> graders learned multiples of seven and 1<sup>st</sup> graders learned parts of a plant. From this study there was almost a 100% positive feedback of retained information learned from the songs. In 1<sup>st</sup> grade, 11 out of 12 randomly selected students answered questions about the parts of a plant accurately. In 3<sup>rd</sup> grade, eight out of ten randomly selected students answered all of their multiples of sevens correctly. 5<sup>th</sup> graders had 100% recall of the parts of the brain (Hayes, 2009). The students in the study

not only learned the knowledge presented to them, but also showed enthusiasm and interested in the previously tedious and difficult lessons. “Uniformly they [5<sup>th</sup> graders] commented on how easy it was to learn the parts of the brain this way. One student mentioned how hard it was sometimes to learn scientific terms when she just reads them but this made it so much easier for her” (Hayes, 2009).

### Statistical Information

There is not a wealth of statistical information concerning mnemonics. The Education Department does not have statistics that show how test scores are rising due to mnemonics use, nor how many teachers are using mnemonics in their classrooms. Instead, I took a different route.

Through my research I found that mnemonics are successful in teaching core content areas. I looked at how many students are reaching proficiency in those areas, and therefore, how many children could benefit from the use of mnemonics. I looked specifically at the state of California’s scores from 2008-2009 school year, which is the most current information. 65% of California’s fourth graders are testing as proficient in math and language arts. 42% of students with disabilities and 55% of economically disadvantaged students in the 4<sup>th</sup> grade are proficient in math. There are only 33% of students with disabilities and 47% of students whom are economically disadvantaged whom are proficient in language arts. 49% of elementary school students were proficient

in science. Only 50% of California's schools are meeting the federal AYP. (U.S. Department of Education, 2011)

These statistics clearly show that there is a need in core content areas for students to become engaged and retain more of what they learn. By teachers incorporating mnemonics into their core content lessons we may be able to see a change in how students perform on tests and in their schoolwork.

#### Interview with an Expert

##### *Sample and Site*

I was put in contact with Mrs. O through my Master's supervisor (personal communication, February 2012). Mrs. O is a veteran teacher of 20 years, and has taught everything from pre-school to high school and ESL to music. She is also an avid user of mnemonics in her classrooms, at all levels. She is a past Dominican masters' student who also completed a thesis focusing on the use of mnemonics in the classroom.

##### *Access and Permission*

I approached Mrs. O via e-mail. She got back to me very promptly and was more than willing to take part in an interview. I sent her a list of preliminary questions, which she answered and returned to me. Following receipt of her questionnaire, I created more in-depth questions to ask in a following phone interview. The following responses are a combination of both written and phone interviews.

### Summary of Findings

Mrs. O is a born musician; born and raised into a musical family. She has taken her passion for music and incorporated it with her love of teaching. Mrs. O uses mnemonics and music in every subject in her classroom; social studies, math, phonics, science etc. It is a part of the regular routine. She notes that, “I break out into song at every opportunity. I catch a rhythm when I can. I make a rap when I see fit. I engage the kids in every subject in this way.” Mrs. O admits that this practice often throws kids for a loop at first. They are shocked, and some times embarrassed, by her unprompted break into song. Yet soon enough, they are singing right along with her.

Mrs. O brings her students’ interests and challenges together into something fun and usable. When recently learning about compound words the class created a mnemonics to the tune of chart topping hit “Baby You’re a Firework.” Newly dubbed, “Baby, You’re a Compound Word.” In addition to helping students learn specific material, Mrs. O incorporates the study of syllables, rhythm and, best of all, fun, into her lessons.

When asked about students’ use of these songs, Mrs. O had countless success stories to share. Students struggling with spelling are encouraged to sing their words in practice and even during the test. She also shared an account of past students in high school and beyond still using a fun, cowboy-themed, counting-by-4’s song learned back in elementary school. Mrs. O has experienced, time and time again, students leaving a

lesson in her class smiling and excited, not only about the new song, but also that they learned and were successful.

Mrs. O creates her songs in the moment or students bring up ideas to share. She expressed that the whole process is very natural. Once the students begin to hear songs used for lessons it becomes contagious and they want to be a part of it. Mrs. O notes that parents often come to her sharing how excited their child was to teach the family a new song and that it was stuck in all of their heads. She knows it is working because she continues to see her students involved and excited about what they are learning, no matter the subject they are working on.

#### *Ethical Standards*

This paper adheres to ethical standards in the treatment of human subjects in research as articulated by the American Psychological Association (2010). Additionally, the research proposal was reviewed by the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), and approved.

## Chapter 3 Method

### Introduction

Throughout this process I have been looking at mnemonics in the elementary school classroom. My research question is, do mnemonics work in elementary school classes and, if so, why? I thought the best way to approach this is to ask teachers, who are currently teaching, what mnemonics they use or have used. Also, what the response has been from parents, students and other teachers as they used mnemonics.

### Sample and Site

I sent out an open-ended questionnaire to teachers who are currently working in specific public schools. I surveyed teachers in three northern California school districts.

### Ethical Standards

My research proposal was reviewed by my advisor and the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), and approved, prior to my surveys being conducted. In my summary report, confidentiality of participants was preserved. No identifying information was used.

### Access and Permissions

I used the snowball method to gain access and permission from my participants. I began with one or more teachers at a school, then was introduced to and interviewed other teachers at their site or in their district. All teachers read and agreed to the Dominican University consent form.

### Data Gathering Strategies

To gather data from my participants, I asked each to fill out a short opened ended questionnaire. The questions centered around the teachers' grade level and years of teaching experience, as well as their experience with mnemonics.

### Data Analysis Approach

In order to analyze the data collected from participants' opened ended surveys, I looked for common threads and themes within the answers. I also paid close attention to differences that may be brought up in students' reactions to mnemonics.

## Chapter 4 Findings

I sent out e-mail questionnaires to teachers currently teaching in North Bay public elementary schools. There was a section for teachers who currently use mnemonics in their classrooms, and also one for those who do not. All of my responses were from teachers currently using mnemonics.

Participants were asked to respond to open-ended questions with as much or as little information as they would like to add. The first question asked was, what grade(s) have you taught/ do you teach when you have used /use mnemonics? Of the seven surveys received; four were primary teachers, kindergarten – third grade, one was an upper grade teachers, fourth – sixth, and two had taught and used mnemonics in primary and upper grades. When asked how long teachers had been teaching responses varied. I had one teacher who had been teaching for one year, two teachers who had been teaching for two to nine years and four teachers whom had been teaching 10+ years. Participants responded to having used mnemonics in a large variety of subjects. These included math, phonics, science, and social studies. Two teachers also responded to using mnemonics as a tool for classroom/ behavior management. Participants of this survey expressed a large variety of reasons for beginning to use mnemonics. Three were taught songs at professional development trainings, such as GLAD, and continued to use those skills in their own classroom. One teacher expressed that she completed her student teaching in a classroom that was constantly singing and many of those songs transferred into her

classroom when she was hired. Another participant expressed that during his career, he had to find ways to engage students in a new, fun ways. He found that music worked well and continued to use it. Most participants responded to getting materials from other colleagues or professional development trainings/ programs. Some cited the internet as a great resource. Two even noted that when in need of a new song they created their own or helped students create them.

Participants were asked to express how their students, parents and peers responded to their use of song. The interviews showed that many students really enjoyed the songs, were engaged and learned quickly. Five interviews noted that at first students were taken aback from the outburst of song, but soon it became common place and routine. Most teachers responded that colleagues were supportive of mnemonics being used. Many of the primary teachers who responded, expressed that many other classrooms in their grade also used songs, but that upper level teachers often hesitated to use mnemonics. All of the participants responded to parents reacting positively to songs being used in the classroom. Interviews noted that parents remarked on students singing the songs at home and teaching them to the whole family.

Participant questionnaires all expressed that songs gave their students something that they attached meaning to. All participants also noted that they have not seen substantial gains in scores, but that the students continually seem to be engaged and having fun while learning and singing. When asked to give advice to teachers who are not currently using mnemonics, all participants responded with the idea to give it a try; there

is nothing to lose. “Many teachers feel embarrassed to use it at first, or think their students are too old for it. However, it’s worth getting over the initial hesitation, and the students do enjoy it” (Interview from DK, 4<sup>th</sup> & 5<sup>th</sup> grade teacher). Another teacher responded on her own apprehension with using mnemonics saying, “Kids will never tell you that you have a bad voice!”

### *Overall Findings and Themes*

All of my responses included positive accolades to using mnemonics in the classroom. All participants noted that they had received positive response from students, parents and school staff , if any at all, when using the mnemonics. From the questionnaires I gathered that professional development was a successful way to begin using mnemonics, as well as a resource for getting new materials and songs. Teachers responded to having used mnemonics in all core content areas, as well as for behavior management. Most teachers who responded were primary teachers, but there was a smaller number of teachers using mnemonics who taught upper grades as well.

## Chapter 5 Discussion /Analysis

### Summary of Major Findings

Teachers in all grades understand the benefits of using mnemonics in the classroom. All cited that the presence of mnemonics helped their students to be more engaged and encouraged shared learning beyond the classroom walls. Students were able to easily recall and use these tunes long after the lesson has ended.

### Comparison of Findings to Previous Research

Current research shows that singing, moving and overall enjoyment of a subject enhances the learning process and long term recall of material. All of these requirements are present when using mnemonics in the classroom. My research proved similar findings. All of the teachers that I surveyed noted higher levels of learning, engagement and fun while singing songs based on the core content material.

### Limitations/Gaps in the Study

This study was conducted using volunteer responses. There were very few responses to my survey. I was limited in the number of teachers to whom I had access. I was only able to send questionnaires to teachers whom I knew personally, or were colleagues of friends.

This kept all of my study participants located in Northern California, and more specifically the Bay Area.

This study did not look into how different racial or ability leveled students can learn through mnemonics. Students were examined in the general term. I also surveyed teachers who used mnemonics. This study looked solely through a teacher's lens. No past nor current students were questioned to understand their perception of mnemonics in the classroom and its seemingly long-standing effects.

#### Implications for Future Research

This research showed that teachers who are passionate about mnemonics in the classroom and implement it with enthusiasm, do so with positive impact to their students. No study exists examining longitudinal retention of material later in life by students who had learned mnemonics while in elementary school. There was also a gap in research to show whether or not musical upbringing or exposure heightened a students' reception of mnemonics.

#### Overall Significance of the Study

This study is significant to teachers in all stages of their careers looking for a new way to engage and teach their students. Though many teachers are hesitant to use song, frequently due to their own insecurities, it has been shown to be effective at reaching

students on a new level. With a proper set of resources, training and a boost of courage, any educator can effectively bring mnemonics into their classroom.

#### About the Author

Arianne Waite-McGough earned her teaching credential in 2011 from Dominican University of California. She is currently living in Santa Rosa and pursuing her dreams of being an elementary school teacher. She is a lover of all types of music and is very interested in using mnemonics and music in her own classroom.

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