NSU Florida
NOVA SOUTHEASTERN UNIVERSITY

Transformations

Volume 9
Issue 1 *Winter 2023*

Article 1

November 2023

Creating Mandalas for World Peace While Incorporating Mathematics, Art, Literature, Writing, and Technology

Joseph M. Furner
Florida Atlantic University, jfurner@fau.edu

Creating Mandalas for World Peace While Incorporating Mathematics, Art, Literature, Writing, and Technology

Abstract

Across the USA there are more and more students whose parents are from around the world. It is important teachers can effectively teach mathematics to reach all students, particularly those with limited English proficiency, while establishing interdisciplinary and cultural connections and even working toward world peace. The purpose of this paper is to share how a class of students from an elementary school in South Florida with their teacher created mandalas to teach mathematics, art, writing, and even world peace to their students. Math teachers should strive to bridge the cultural gap among all students by incorporating innovative ideas as well as art, historical and cultural connections into their teaching so to foster understanding, appreciation, and tolerance for the richness inherent in diversity and a sound understanding of mathematics and art appreciation for other cultures which may even promote world peace as well as lowering math anxiety in a creative and meaningful ways. This paper shares a lesson plan activity using mandalas to teach mathematics while also incorporating writing, technology, art, and having students think about world peace.

Keywords: Mandalas, Mathematics, Geometry, Algebra, Art, Writing, Technology, Literature, Peace

Creating Mandalas for World Peace While Incorporating Mathematics, Art, Literature, Writing, and Technology

Introduction

The purpose of education is to awaken joy in creative expression and knowledge.
-Albert Einstein

The mandala is a microcosm within itself, a tiny representation of the universe where myriads points unite and oppose each other to achieve a harmony of peaceful unity.

-Peter Patrick Barreda

Lake Worth, Florida, just south of West Palm Beach boasts one of the largest populations of Mayans outside of Mexico and Guatemala it also has a very high Haitian population. Schools like Indian Pines Elementary School in Lake Worth have very high populations of English Language Learners (ELL), many whose parents are from Mexico, Guatemala, Central America, South America, and Haiti originally, but with their children born here in Florida. This paper shares a project with one of the Second Grade Teachers here, Mrs. G and how she worked with the author and professor at a local university to create a project that integrated mathematics, art, writing, and with efforts to work toward world peace.

Effectively teaching mathematics to all students, and particularly those with limited English proficiency (LEP), means making interdisciplinary and cultural connections while integrating subject areas like math, language arts, and visual arts. Mathematical notations may not share cultural uniformity and for children from diverse backgrounds these differences may present obstacles to learning (Crandall, 1987; Dale & Cuevas, 1987; Moore, 1994; Diaz-Rico & Weed, 1995). Exploring the historical and cultural variants in mathematics can help all students develop experiences and background knowledge. Standards for teaching mathematics developed by NCTM (1989) and best practices suggested by Zemelman, Daniels, and Hyde (2012) emphasize the importance of relating mathematics to prior knowledge, background, real life situations, manipulatives, and technologies. Also, Salazar (2019) found that working with and coloring mandalas had an impact on students' math anxiety level and making students feel more comfortable with the math they are learning when exploring with mandalas.

The study of the cultural and historical contexts of ancient civilizations can be an intriguing way to introduce students to the evolution and logic of today's mathematics (Bidwell, 1993). This paper brings up an issue of ethnomathematics which is beneficial for students to be exposed to as they learn important mathematics concepts, while learning about the mandalas students can explore different cultural ways of using mathematics in diverse cultures. This also helps to highlight such connections where educators can further emphasize that students learn most effectively when taught in ways that resonate with their various ancestral cultural backgrounds. The purpose of this article is to: 1) to explore the

mandalas; 2) to provide suggestions for infusing TESOL (1991) strategies into planning and teaching; 3) to make recommendations to infuse more historical and cultural connections into the math curriculum; and 4) to suggest the use of math, art, writing and even infusing technology as part of math instruction. This lesson plan offers students to learn many math concepts as can be see in the lesson plan (See Appendix A) and cover state math objectives required for the learner (Florida Department of Education, 2020).

What are Mandalas?

A mandala is also known in Sanskrit meaning "circle" and is usually an artistic representation of higher thought and deeper meaning given as a geometric symbol used in spiritual, emotional, or psychological work to focus one's attention. The images of mandalas showed up first in India around c. 1500 - c. 500 BCE however they have been used by many cultures around the globe in many different times up to our present time period (Mark, 2020). Policar (2009) shares how important it is as students learn about geometry and shapes, they can use them as they create mandalas and then there is a better connection to the mathematics and the actual mandalas. Creating the mandalas can become the entire geometry curriculum as you can cover so many math topics as you create the mandalas (See sample mandalas in Appendices A and B).

The meaning of a created mandala often depends on the individual person creating or observing such an image, often mandalas in most culture serve, more or less, the same purposes of centering an individual or community on a given narrative in order to encourage introspection and, ultimately, an awareness of one's place and purpose in the world; this awareness then allows for peace of mind which is a beautiful thing for all of us to consider creating and exploring. What the mandala may represent to one person it essentially often reflects order and peace and it is understood as an almost self-created image of such order. Most mandalas are round or circular, but they can also be square and always enclosed (Mark, 2020). Such activities like suggested in this paper relate to Eco art where you tie in art and the environment/world into you lesson as cited in Geffen et, al (2022). This activity ties math with world peace and various cultures.

A Mathematics Lesson Using Best Practices While Creating Mandalas

As part of this project on mandalas, please see Appendix A and B for sample mandalas created by students and suggested lesson plan ideas. Possible Math Lesson Scenario (See Lesson Plan in Appendix A and Sample Mandalas in Appendix B created by students from this lesson plan activity)

Mrs. G., the classroom teacher, explained to the students about mandalas and showed many examples from books, videos, and even some stories from some children's books related to them. The resources can be found in the sample lesson plan below. After the students learned about mandalas and saw some samples in books, online, in videos, and children's literature, they were given the opportunity to create their own mandalas. The teacher created many shapes and cut outs for students to use to paste and create their own design for a mandala with the shapes, they were allowed to glue on the shapes on to paper plates, using the round plates since mandalas use circles and centers, the design is focused around the circle from the center out or from the border to the center. Students were allowed to draw and explore, creating designs and also using patterns, shapes, colors, and transformations like symmetry, rotations, reflections, transformations and tessellations on

the mandalas. Students were taught that the mandalas help to center people and also bring peace. They were also asked to write a short story/statement of how their mandala design can contribute to peace or bring peace to others and the world and why peace today is so important in our world. Stang (2006) shares about the circle and dividing it in to various parts as you create the mandala, looking at all the math, art, design, and even fractional parts that can be covered by teaching using mandalas.

Following the whole class sharing session with books, videos, and stories, the students worked in pairs at computer stations where they visited websites and took an "Internet field trip." The students saw many types of mandalas, with various designs, colors, shapes used, colors, and allowed them to discuss feelings as they explored with classmates. Johnson and Stemple (2005) discuss how math, art, and technology are at a cross roads and we as educators need to make better connections to using more technology in the classroom and how important it is too that students see the math in art and vice a versa as they learn important concepts. Zhou (2018) advocates using arts and technology in the teaching of mathematics and connections help in the learning of the content area one is focusing on. (See the Lesson Plan in Appendix A for the Technology connections).

After the computer session, the students worked in groups of four where they used paper plates, white round large paper plates and cut out shapes from the pattern block manipulatives, where they could also trace the shapes, create their own designs, and explore making many designs. They were also offered crayons and other resources in their mandala designs. The students had already learned from their website experiences that what a mandala looked like and many examples. The connection between the larger white paper plate and the smaller colored shapes and designs were emphasized and the students were encouraged to create designs so to include geometric patterns, designs, symmetry, transformations, etc. using a variety of colors to make their own personalized mandalas (See Photos in Appendix B for Student Samples). Carpenter and Gandara (2018) advocate from their research that teachers incorporate art ideas within the content areas like mathematics and such activities like the mandalas help make better connections in a collaborative way for our learners today.

This math lesson is interdisciplinary in that it incorporates literature, technology, manipulatives, multicultural experiences with mathematical concepts, and then students were asked to write a story to go along with their mandala to talk about peace and how their mandala can bring peace and center someone by using it. It is critical today that students incorporate writing into their math learning. Also, making connections to the world, the mandalas connect to math by the geometric designs that are created, and use shapes, colors, designs, and geometric transformations to develop the mandala. Students can see the connections to math, and also try to feel centered and stretch to have them focus on how these designs can help student image peace, centering, and bring some cultural connections to mathematics. Such interdisciplinary connections are advocated with research by Zhou (2021).

Mathematics Concepts and Integration Involved for this Lesson

This lesson on mandalas can be very powerful for our young people. While it is not only teaching young people about peace, meditation, and being centered. It is also covering many mathematics concepts that have to be covered in today's math curriculum such as: geometry, algebra and patterns, shapes, geometric transformations like rotations,

reflection, and transformations, symmetry, tessellations, colors, design, etc. Students can also use the math manipulatives like pattern blocks and tangrams to trace and use as part of their own individualized created mandalas. While learning the mathematics students are also able to make connections to the art as well and see how shapes, geometry, and math are found in art and in mathematics and make the connections as they learn while also employing creativity in the process (Jarvis and Naested,2012).

Apart from the math that is being learned and applied, students can read books and literature about mandalas, explore websites, maybe even use sketching software like GeoGebra, and others to make designs and transformations for their created mandala. Students can also be encouraged from their books and literature and information on mandalas to write stories about peace and how their created mandalas can bring peace to others and the world and how their mandalas can bring such centering, meditation, and peace. It is critical today when teaching that interdisciplinary connections are made for our young learner for their lives (Zhou, 2021). Gorkin and Kilmer (2015) advocate for teaching math using mandalas and emphasizing the math when creating them covering many mathematical ideas. Zhou (2021) advocates that it is important as educators to connect art, culture, science, and technology and describing nature through visual data like seeing the math and geometry in a mandala as well as seeing mandalas from various cultures.

All students, particularly those who are reluctant mathematicians or who are limited in their language proficiency, can benefit from the high interest and risk-free nature of the learning experiences in creating mandalas. Groman (2021) also emphasizes that when teaching mathematics, we need to incorporate creativity in the teaching of our subjects and what better way to do this then to have students create mandalas as they learn mathematics and employ their own creativity in the process. Various resources can be used to modify and enhance the lesson to meet diverse populations of students while incorporating math, writing, art, and technology (See Appendix A-The Lesson Plan and Photos by Students of their Mandalas).

Summary

Teachers in today's mathematics classroom are confronted with the challenge of meeting the needs of students with diverse needs and backgrounds. The NCTM *Standards* and the literature on diverse learners suggest that all students may benefit from strategies which promote cultural and historical connections and the use of technologies like GeoGebra and manipulatives which focus upon the active engagement of students through exploration and communications. Incorporating mandalas while using technology, math, writing, and creativity today are critical for our STEM students in this advancing technological era.

In a passionate plea for bridging the culture gap in our classrooms, Moore (1994) proposes that "Mathematics is definitely not culture-free...no mathematics teacher could even contemplate seriously taking only the values of his culture and a textbook which is a product of his culture and imposing both himself and the textbook upon individuals possessed by a culture that diverges from his in any significant area." (p. 13).

Teachers who use a variety of resources and who incorporate innovative ideas like creating mandalas into their teaching in order to make learning more meaningful will find students more interested in mathematics. Salazar (2019) found that coloring mandalas had an impact on students' math anxiety level too and making students feel more comfortable

with the math they are learning. Bridging the cultural gap in mathematics instruction will profit all students as they becoming more understanding, appreciative, and tolerant of one another and each other's cultures while teaching mathematical ideas.

References

Bidwell, J. K. (1993). Humanize your classroom with the history of mathematics. The Mathematics Teacher, 86(6), 461-464.

Carpenter, T., & Gandara, J. (2018). Making connections: Collaborative arts integration planning for powerful lessons. *Art Education*, *71*(4), 8-13.

Crandall, J. (1987). ESL through content-area instruction. Englewood Cliffs, New Jersey: Prentice Hall, Inc.

Dale, T. & Cuevas, G. (1987). Integrating language in mathematics learning. In A. Crandall (Ed.), ESL through content area instruction: Mathematics, science, and social studies (pp.9-53). NJ: Prentice Hall.

Diaz-Rico, L. & Weed, K. (1995). The crosscultural, language, and academic development handbook: A complete K-12 reference guide. Boston, Massachusetts: Simon Schuster.

Florida Department of Education. (2020). Florida's Benchmarks for Excellent Student Thinking (B.E.S.T) Standards for Mathematics. FDOE, Tallahassee, FL.

Florida Department of Education (1996). Performance standards for teachers of English for speakers of other languages, Tallahassee, FL: Author.

Geffen, A., Rosenthal, A., Fremantle, C., & Rahmani, A. (Eds.). (2022). *Ecoart in Action: Activities, Case Studies, and Provocations for Classrooms and Communities*. New Village Press.

Gorkin, P., & Kilmer, S. (2015). Do the math!: Mathematical Mandalas. *Math Horizons*, *23*(1), 15-15.

Groman, J. L. (2021). The mirror: Creativity as seeing and being seen: Autoethnography of a teacher. In *Organic Creativity in the Classroom* (pp. 267-283). Routledge.

Jarvis, D., & Naested, I. (2012). *Exploring the math and art connection: Teaching and learning between the lines*. Brush Education.

Johnson, P., & Stemple, C. (2005). Math, art and technology, a cross roads. In *Society for Information Technology & Teacher Education International Conference* (pp. 2921-2924). Association for the Advancement of Computing in Education (AACE).

Mark, J. J. (2020). Mandala. World History Encyclopedia. Retrieved April 10, 2022 from https://www.worldhistory.org/mandala/

Moore, C. G. (1994). Research in Native American mathematics education. For the Learning of Mathematics, 14(2), 9-14.

National Council of Teachers of Mathematics (1989). Curriculum and evaluation standards for school mathematics. Reston, VA: Author.

Policar, R. (2009). Geometry through Mandalas: a supplemental geometry curriculum.

Salazar, L. R. (2019). Exploring the effect of coloring mandalas on students'math anxiety in business statistics courses. *Business, Management and Education*, *17*(2), 134-151.

Stang, P. F. (2006). Mandala and 5, 6 and 7-fold Division of the Circle. In *Bridges London: Mathematics, Music, Art, Architecture, Culture* (pp. 645-646).

Teachers of English to Speakers of Other Languages, Inc. (1991). ESL standards for pre-K-12 (Brochure), Alexandria, VA: Author.

Zemelman, S, Daniels, H., Hyde, H. (2012). Best practice: New standards for teaching and learning in America's school (4th ed.). Portsmouth, NY: Heinneman.

Zhou, J. (2021). Connecting Art, Culture, Science, and Technology. In *Describing Nature Through Visual Data* (pp. 100-113). IGI Global.

Zhou, J. (2018). Bridges among visualization, aesthetics, and technology. in *Visual Approaches To Cognitive Education With Technology Integration* (pp. 101-120). IGI Global.

Appendix A

Sample Lesson Plan on Creating Mandalas in Math Class

Developing a Math Lesson on Mandalas

The following are suggestions for incorporating the mandala into a teaching unit in math class. The lessons might be taught from an interdisciplinary, integrated curriculum perspective, and modified to meet age-appropriate needs of the students. This lesson too can serve in reinforcing concepts related to geometry, patterns, shapes, and spatial sense. The strategies specifically include effective learning techniques for ESOL students (English for Speakers of Other Languages).

Learning Objective(s) [Florida BEST Math Standards]:

MA.2.GR.1 Identify and analyze two-dimensional figures and identify lines of symmetry.
MA.2.GR.1.1
Identify and draw two-dimensional figures based on their defining attributes. Figures are limited to triangles, rectangles, squares, pentagons, hexagons and octagons.
MA.2.GR.1.2
Categorize two-dimensional figures based on the number and length of sides, number of vertices, whether they are closed or not and whether the edges are curved or straight.
MA.3.GR.1 Describe and identify relationships between lines and classify quadrilaterals.
MA.3.GR.1.1
Describe and draw points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. Identify these in two-dimensional figures.
MA.3.GR.1.2
Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
MA.3.GR.1.3 Draw line(s) of symmetry in a two-dimensional figure and identify line symmetric two-dimensional figures (Florida Department of Education, 2020).

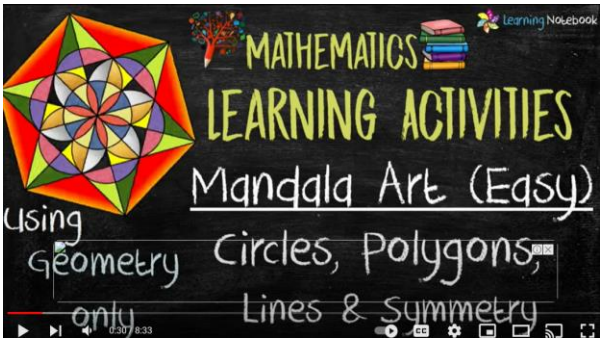
Menu of Suggested Activities:

Menu of Motivation (Initiating) Activities

1) Pairs of students (one of which is an ESOL student) will take and Internet Field Trip and visit websites to read about mandalas
2) Students view some videos on YouTube about Mandalas like:

https://youtu.be/WbZsG0pkYtQ

and



https://youtu.be/wH0QOLqNJM8

3) Students meet in discussion groups. Possible topics for discussion might be:
   a) defining terms such shapes, symbols, geometric transformations
   b) describe similarities and differences between shapes, colors, designs

Explore research on the psychology of shapes, according to Looka.com, they provide some useful information about the psychology of shapes which gives learners the upper hand when designing a logo. By working with the subconscious meaning behind each shape, you'll better communicate your brand and set the right foundation for your logo.

According to Looka.com, the attributes associated with basic shapes:
Circular shapes: Unity, community, friendship, stability, feminine
Triangular shapes: Masculine, power, law, science
Square shapes: Strength, efficiency, professionalism, practicality
Vertical lines: Aggression, masculinity, strength, progress
Horizontal lines: Calm, tranquility, community, speed

Menu of Core Activities

1) Create a mandala
2) Decide on shapes, design, symbols, colors, patterns to us
3) Create mandala with a theme and connect it with writing
4) Read literature which relates to cultural differences in mathematics (particularly Mandalas).
5) Develop and refine discussion groups and paired activities as students each create their own mandala and write a story about it. Possible questions for discussion group:
   - Can you create a mandala?
   - Why do you think Mandalas show up in cultures?
   - How do mandalas compare in different cultures?
   - Why do you think mandalas are appealing to humans?
6) Practice learning about and seeing many different mandalas.
7) Write reflective essays or story about your mandala and peace.
8) Create a mandala with some geometric characteristics and share.
9) Keep a journal of math activities and ideas.
10) Illustrate Mandalas with a selected artistic medium such a magazine photo collage, penciled sketch, etc.
11) Locate additional books and websites about Mandalas and art.
12) Have students explore, create mandalas and write how it can help with world peace.
13) Invite parents and selected community guest speakers who are knowledgeable about the mandalas and art in the world.

Bibliography of Sources for Lessons in Teaching Units on Mandalas

Books for the Lesson with Students

Chen, K. S. (20202). *Mandalas For Peace: A Meditative Adult Coloring Book.* Sunshine Studios Publishing: NY, NY.

Cunningham, B. (2003). *Mandala: Journey to the center.* DK ADULT Publishing: NY, NY.

Dahlke, R. (1992). *Mandalas of the world: A meditating & painting guide.* Sterling Publishing: NY, NY.

Finsher, S. F. (1991). *Creating mandalas.* Shambhala Publishing: Boulder, Colorado.

Videos/Films

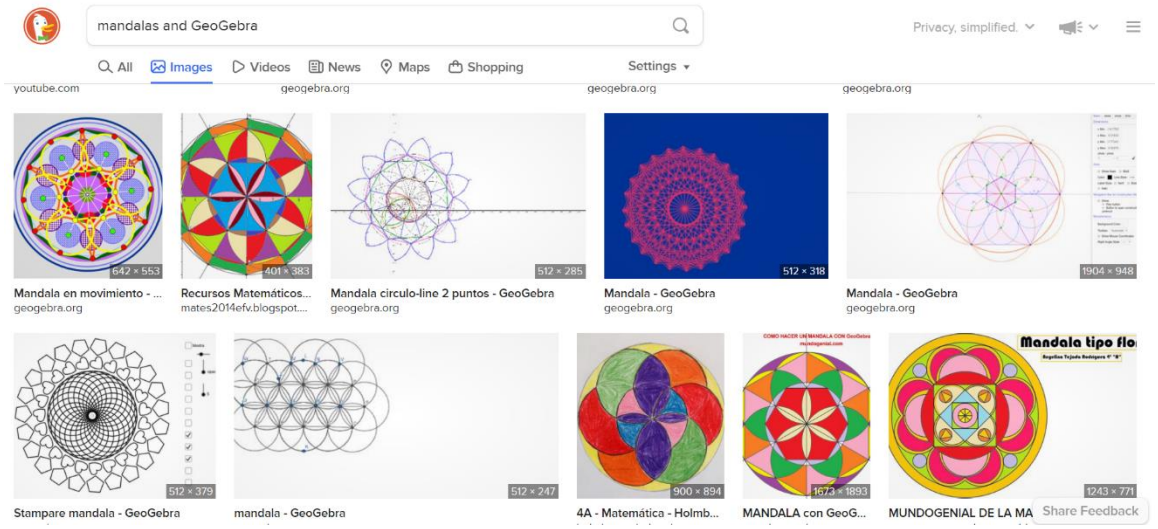
Watch the YouTube Video about How to Create Mandalas with GeoGebra at: How I make mandalas with Geogebra - YouTube at: https://www.youtube.com/watch?v=dhgDoLHq5Y4

Internet Websites

Mandala – GeoGebra at: https://www.geogebra.org/m/jjkabrzw
And https://www.geogebra.org/m/vzBncpYw
https://www.slideshare.net/eam9/mandalas3-31999608

https://www.pinterest.com/pin/circle-mandala-geogebra--393853929887319565/

Mandala Examples Online



Other Children's Books Related to Mandalas and Center

All I See is Part of Me - Chara M. Curtis
In this international bestseller, a child finds the light within his heart and his common link with all of life.

Fun is a Feeling - Chara M. Curtis
"Fun isn't something or somewhere or who. It's a feeling of joy that lives inside of you." A world of fun and fantasy unfolds as a child finds that the joy of life begins from within.

How Far to Heaven? - Chara M. Curtis
Exploring the wonders of nature, Nanna and her granddaughter discover that heaven is all around them. An excellent book to help children who are dealing with the death of a loved one.

No One Walks on My Father's Moon - Chara M. Curtis
". . .a beautiful story, beautifully told. Indeed, there are many moons. And there are many truths. To see them clearly it's essential that we learn to see the universe through the eyes of others. If we could teach our sons and daughters nothing else, this would be enough." - Ron Atchison, Director of JustCause

Beautfiful Warrior-Legend of the Nun's King Fu - Emily Arnold McCully
A wonderful book with two heroines that use their inner strength to overcome great obstacles. I use this book in some of my workshops and both boys and girls enjoy it.

The Dot and the Line - Norton Juster
A great little book for both children and adults showing the splendors of mathematics, not to mention the value in using one's brain and creativity.

The Phantom Tollbooth - Norton Juster
Milo is a bored little boy who learns to use his brain to get involved in his own life when a special gift magically appears in his bedroom. My introduction to the book was in third grade andI still enjoy reading it to my own kids, as it's full of metaphors to which adults can also relate.
All Children's book can be found on the *Mandala Project Website* at:
https://www.mandalaproject.org/Links/Books.html

Diversity and Interdisciplinary Connections Within the Lesson Plan

The lesson suggestions include provisions which are appropriate for all students and specially ESOL students. Realia and demonstrations develop vocabulary through web site field trips, literature, and study of artifacts of the culture. Prior knowledge and background are enriched through the study of the historical context of the evolution of number systems while developmentally appropriate activities using manipulatives provide concrete examples which reinforce concept development and use math manipulatives to trace and make their own mandalas. Exploring learning through various media such as drawing, painting, sketching, and creating collages addresses learning styles and promote creativity. Discussion about readings, field trips (actual or Internet), activities, and possible guest speakers prompt analytical and critical thinking as well as metacognition by encouraging students to verbalize their perceptions of learning. Interdisciplinary and cultural connections are established through historical and literature readings, discussions of economic and marketplace functions, and explorations of artistic and scientific contributions from learning about mandalas.

Mandala Websites /Graphics to Allow Students to Explore for Ideas and Samples at:

http://www.asounddesign.com/

http://www.mandalapeacearts.org/

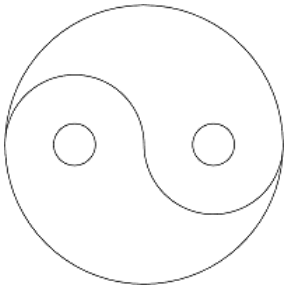
http://www.mandalas.com

http://www.graphics.cornell.edu/online/mandala/

http://www.earthmandalas.com/

http://www.mandalabooks.com/

Example of a Mandala with defined Geometric/Symmetrical Characteristics:

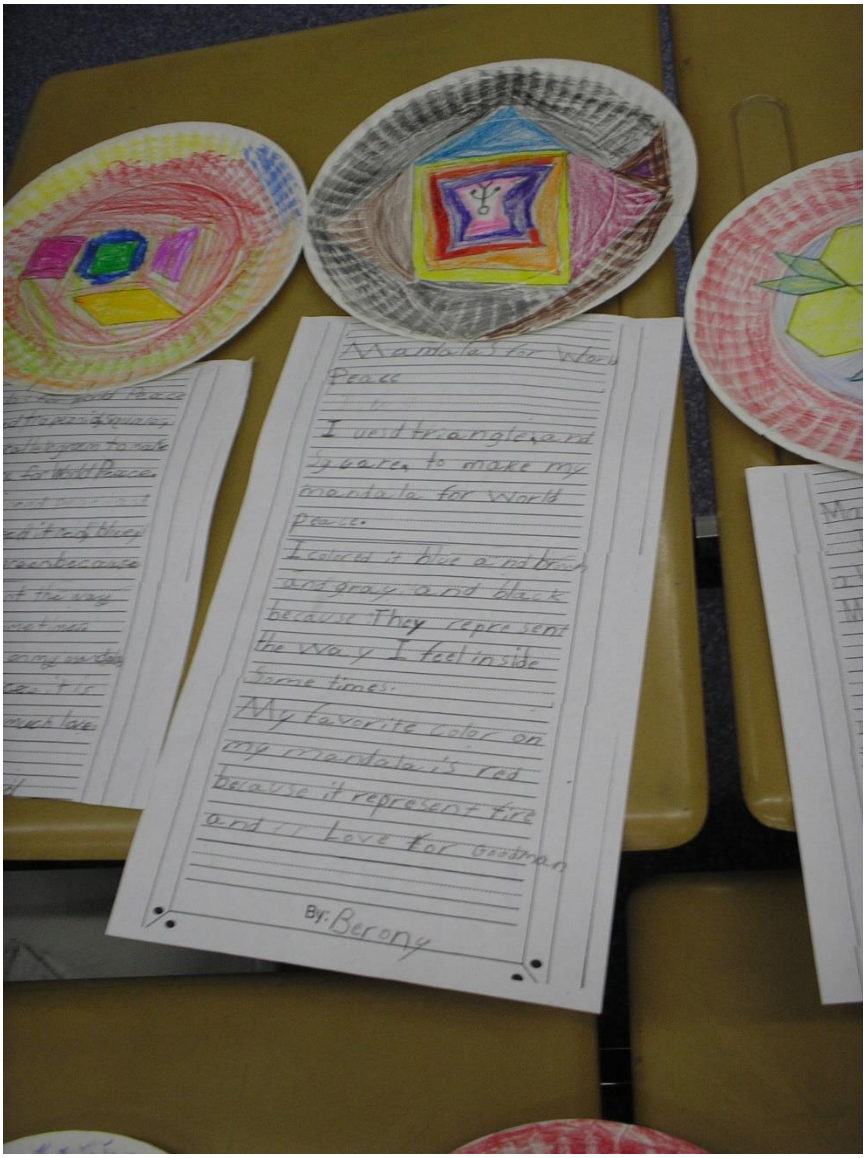


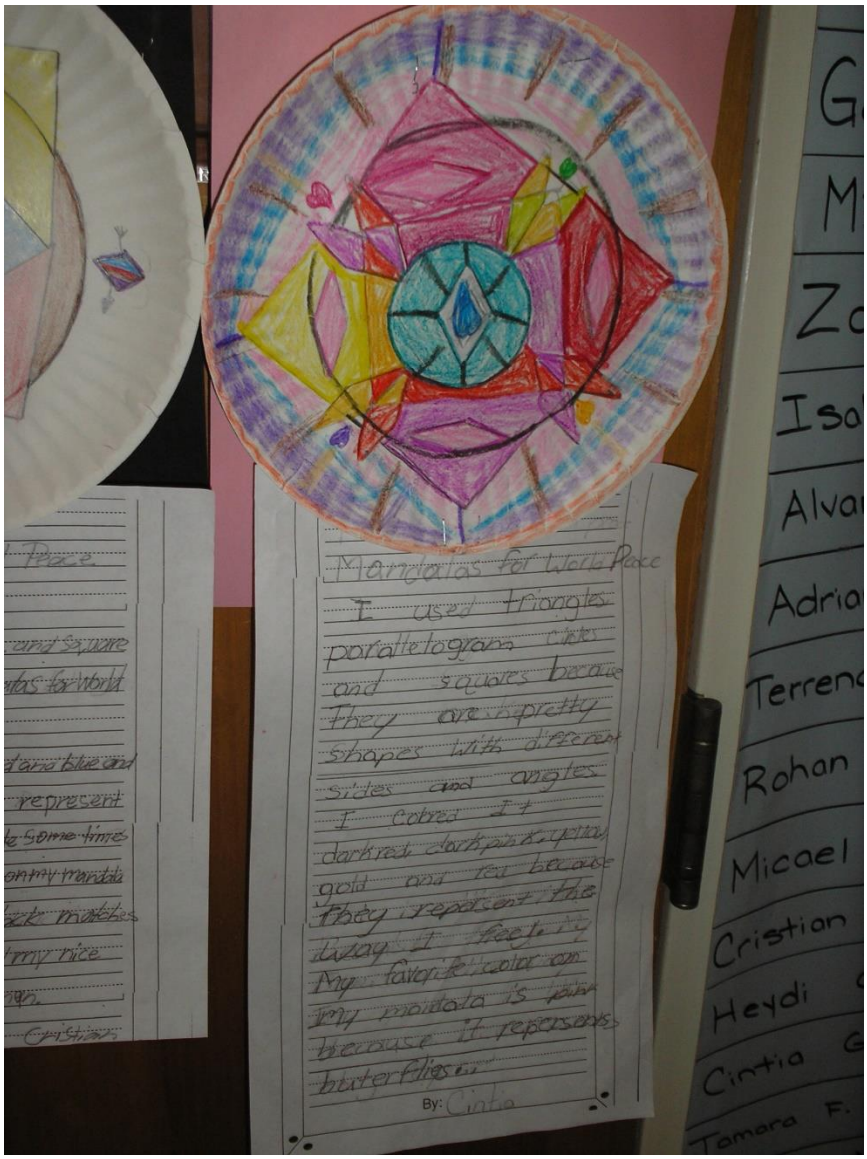
Mandala Peace Arts is dedicated to creating peace through the art of writing Mandala's. A Mandala is an ancient art form. It is a sacred circle that has been used in many traditions around the world. A Mandala can be created in many different ways. The technique we offer is through writing positive words. Thousands of people worldwide have been creating the Mandalas of gratitude and the Mandalas of Bright Words to send forth the written energy of love and harmony. Mandalas can be created regardless of faith, culture, or religion. (Retrieved on February 14, 2023 at: http://www.mandalapeacearts.org/)

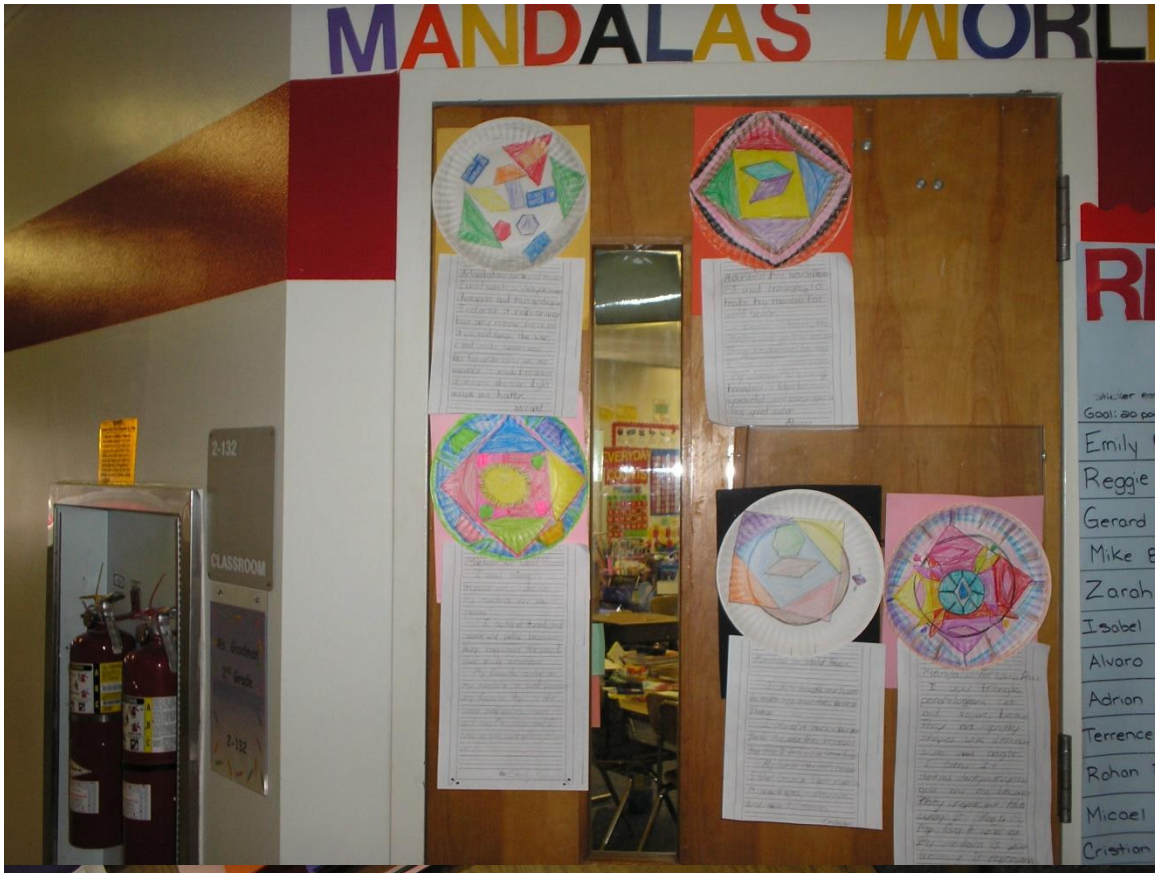
"Mandala (mun'dl-uh), [Skt., circular, round] a concentric diagram having spiritual and ritual significance in Hindu and Buddhist Tantrism. The mandala may have derived from the circular stupa and the ritual of walking around the stupa in a circle. The mandala is seen as a microcosm embodying the various divine powers at work in the universe, and it serves as a collection point for the gods and universal forces. Numbers of deities have specific positions in the diagram, and the symbolism and structure of the mandala are highly elaborated. The mandala symbolizes the totality of existence, inner or outer. Mandalas are used in meditation, particularly in Tibetan Buddhism and Japanese tantric Buddhism. Similar ritual drawings have been found in the sand paintings of Native North Americans and in other traditions." Retrieved on May 6, 2007 at : http://www.mandalabooks.com/) Also, See G. Tucci, *Theory of Practice of the Mandala* (1969); M. Arguelles, *Mandala* (1972); D. F. Bischoff, *Mandala* (1983). For an analytical psychology perspective, see C. Jung, *Mandala Symbolism* (tr. 1972)
~The Columbia Encyclopedia, Sixth Edition

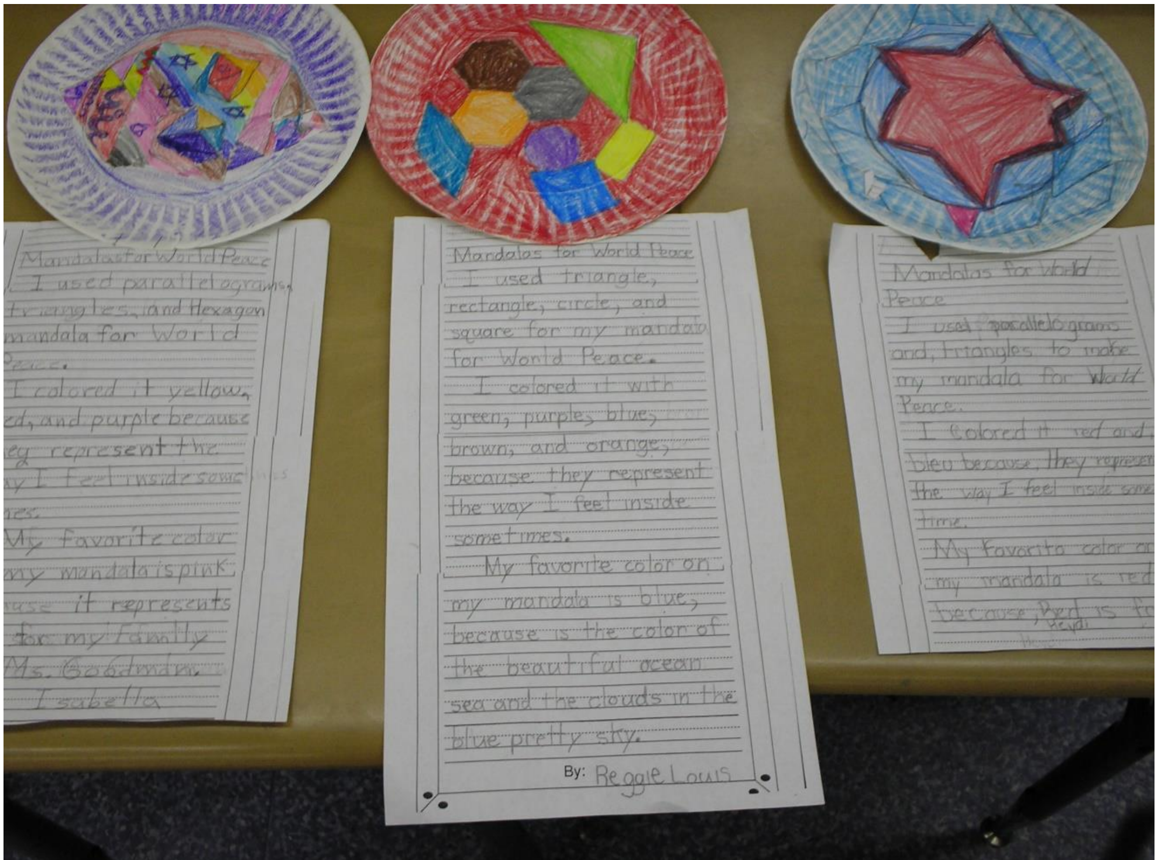
Appendix B

Photos of the Math Art Mandalas by Young Learners

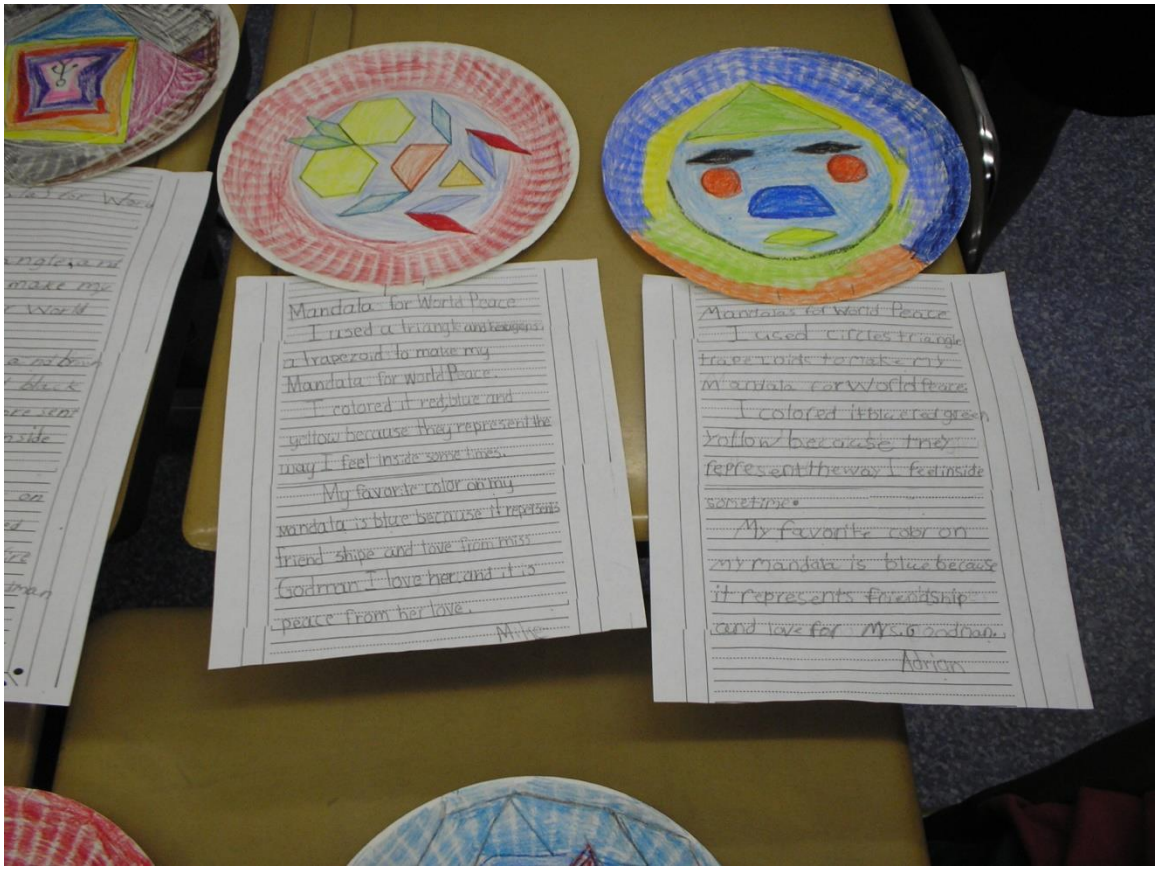

Mandalas for World Peace
I uesd triangles and
Squares to make my
mandala for World
peace.
I colored it blue and brown
and gray and black
because They represent
the way I feel inside
Some times.
My favorite color on
my mandala is red
because it represent fire
and Love for Goodman
By: Berony

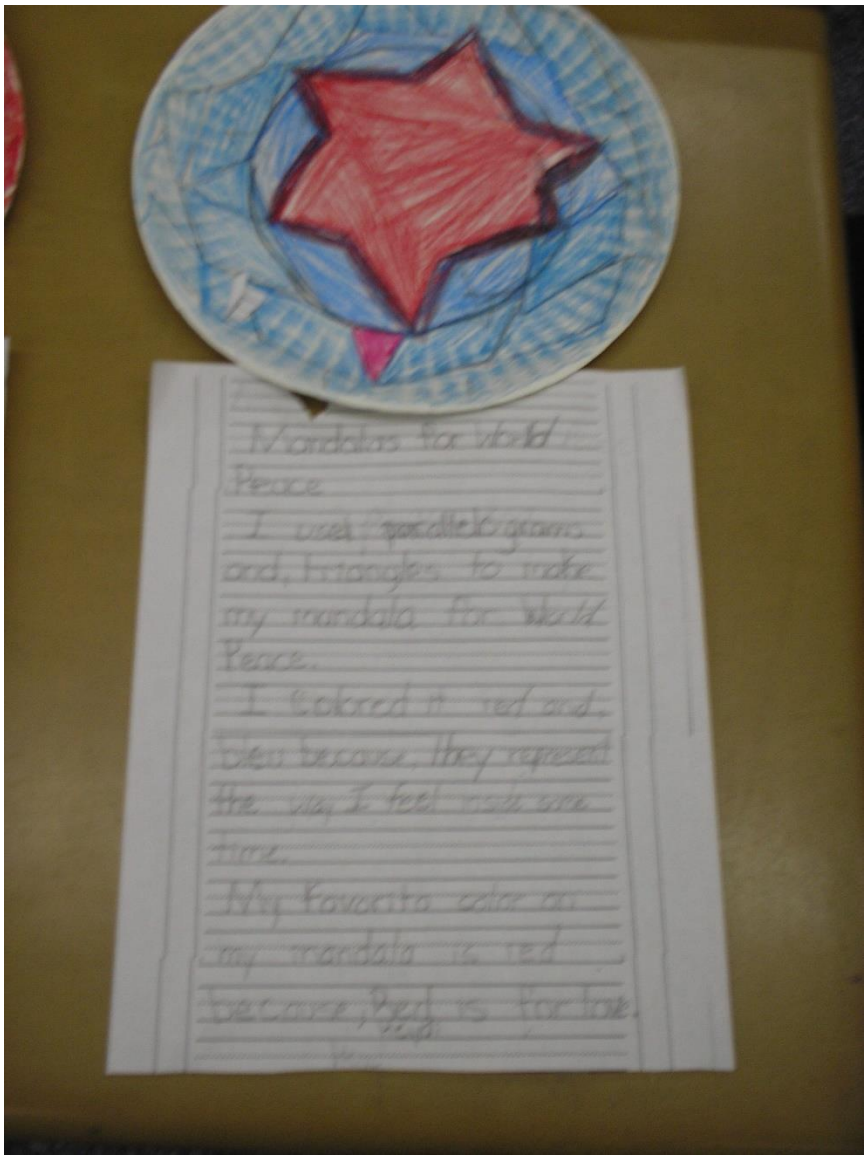

Mandalas for World Peace
I used triangles
parallelograms circles
and squares because
they are so pretty
shapes with different
sides and angles.
I colored it
darkred, darkpink, pretty
gold and red because
they represent the
way I feel in
My favorite color on
my mandala is pink
because it represents
butterflies.
By: Cintia
Micael
Cristian
Heydi
Cintia
Tamara F.


MANDALAS
CLASSROOM
Emily
Reggie
Gerard
Zarah
Isabel
Alvaro
Adrian
Rohan
Micael


Mandalas for World Peace
I used parallelograms triangles, and Hexagon mandala for World Peace.
I colored it yellow, red, and purple because they represent the way I feel inside some times.
My favorite color my mandala is pink, because it represents for my family
Ms. Goodman
Isabella
Mandalas for World Peace
I used triangle, rectangle, circle, and square for my mandala for World Peace.
I colored it with green, purples, blues, brown, and orange, because they represent the way I feel inside sometimes.
My favorite color on my mandala is blue, because is the color of the beautiful ocean sea and the clouds in the blue pretty sky.
By: Reggie Louis
Mandalas for World Peace
I used parallelograms and triangles to make my mandala for World Peace.
I Colored it red and bleu because they represent the way I feel inside some time.
My Favorite color on my mandala is red because Red is


Mandalas for World Peace
I used trapezoid, square, and a parallelogram to make my mandala for World Peace.
I colored it red, blue, yellow, and green because They represent the way I feel inside sometimes.
My favorite on my mandala is blue because it is peace and so much love for Ms. Goodman
Mandalas for World Peace
I used triangle and square to make my mandala for World peace.
I colored it blue and brown and gray and black because They represent the way I feel inside Some time.
My favorite color on my mandala is red because it represent fire and Love for Goodman
By: Berony
Mandala for World
I used a triangle
a trapezoid to make
Mandala for world
I colored it red
yellow because
way I feel inside
My favorite
mandala is blue
friend shipe and
Godman I love
peace from her


Mandala for World Peace
I used a triangle and hexagon, a trapezoid to make my Mandala for world Peace.
I colored it red, blue and yellow because they represent the way I feel inside some times.
My favorite color on my mandala is blue because it represents friend ships and love from miss Godman I love her and it is peace from her love.
Mandalas for world Peace
I used circles triangle trapezoids to make my Mandala for world peace.
I colored it blue red green yellow because they represent the way I feel inside sometime.
My favorite color on my mandala is blue because it represents friendship and love for Mrs. Godman.
Adrian



A Special Thank You:

I would like to thank Mrs. Goodman, 2nd Grade Teacher, from Indian Pines Elementary Schools for incorporating the mandalas into her math lessons and being so innovative and creative with her students in her math teaching, and working with me for so many years when I worked with her school and did professional development there. She always had a welcoming classroom and loved to cook and did a lot with math and cooking as well. I really appreciate her inviting classroom to work with as she turned students on to mathematics.

Author Bio

Joseph M. Furner, Ph.D., is a Professor of Mathematics Education in the Department of Curriculum and Instruction at Florida Atlantic University in Jupiter, Florida. His scholarly research relates to math anxiety, the implementation of the national and state standards, English language issues as they relate to math instruction, the use of technology in mathematics instruction, math manipulatives, family math, and children's literature in the teaching of mathematics. Dr. Furner is the Founding Editor of *Mathitudes Online* at: http://www.coe.fau.edu/centersandprograms/mathitudes/ He is the author of more than 100+ peer-reviewed papers and has been cited more than 2,500 times on *Google Scholar*. He is the author of the book, *Living Well: Caring Enough to Do What's Right*. Dr. Furner currently lives with his family in Florida. Please feel free to email him.

Joseph M. Furner, Ph.D.
Professor of Mathematics Education
College of Education
John D. MacArthur Campus
5353 Parkside Drive, EC 207D
Jupiter, Florida 33458
E-Mail: jfurner@fau.edu