Teaching Mathematics through a Cultural Lens

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This curriculum unit is recommended for:
First Grade Math

Keywords: multiculturalism ethnomathmatics culture, mathematics, common core.

Teaching Standards: See Appendix 1 for teaching standards addressed in this unit.

Synopsis: In this unit teachers will gain an understanding on why teaching with a multicultural lens will support them in closing the achievement gap within their classroom as well as having a classroom culture that supports tolerance and community. Teachers will be able to achieve this through class activities that focus on math and culture. Teachers will learn the importance of using multicultural education to engage and enrich their students learning. We need to dismantle stereotypes and embrace our student's heritage, and socioeconomic status. There is a movement of using mathematics to teach culture called ethnomathmatics. These lessons will bring ethnomathmatics to your classroom. The lessons will complement the social studies curriculum within the mathematics classroom. Each section has a literacy component to support both mathematics and social studies A book list is provided for each major common core mathematics standard that can be used to enhance your instruction. Students will be able to make connections to the curriculum by at home projects and in class assignments. They will also learn about some mathematical history.

I plan to teach this unit during the coming year to 36 students in mathematics and social studies**.**

I give permission for Charlotte Teachers Institute to publish my curriculum unit in print and online. I understand that I will be credited as the author of my work.

Introduction

What is multicultural education? Multicultural education is not just doing activities and/or readings during Black or Hispanic history months or around holiday times. It is the conscious effort to connect students to the world around them in a culturally relevant way throughout the entire school year. It's important for students to feel represented in the classroom not just during holidays or social studies. Being a multicultural educator means embracing your students and others cultural diversity as a means of nurturing your students' academic and personal growth [1]

Why is multicultural education needed in mathematics? As educators we need to provide meaningful lessons that students can connect too. Using a multicultural approach to mathematics humanizes mathematics lessons and topics allowing for students to make personal connections. [2] For educators it is not a replacement of curriculum but an enhancement of curriculum and best practices.

As a teacher in CMS in a title one school where the majority of the students are a minority, I do not look like my students. That is not their fault nor mine, but I can take the time to learn about, appreciate and understand and represent their culture in my classroom. It is up to me to bridge the gap with my students and families. Respect and trust is learned and gained not a given from the start of the school year. Parents want to make sure that their students are heard and understood in schools. In 2014 ethnic minorities made up the majority of our public school system for the first time. The projections show that this trend continues over the next few year [3]. Culture does not just have to be taught in literacy or social studies exclusively. We can use mathematics to teach about different cultures. An important change in mathematical instruction needs to take place in order to accommodate continuous and ongoing change in the demographics of students in mathematics classrooms [4].

A study of 8 educators in elementary schools in eight districts across Colorado found that the mathematics curriculums they use did not meet the needs of the culturally diverse students they had [5]. The teachers shared knowledge of their students including home life, school and community. The study concluded that using a culturally responsive approach allowed their students to make personal connections to the mathematics content. When the teachers used activities that were relevant to the students' lives such as background knowledge and cultural experiences, the students were more engaged [5]. When students come to our rooms they each have their own cultural lens that they view the world with. When educators use the students' background and cultural lens mathematics can be learned with what they already know by making connections 5. We know as educators that best practices say if students can make connections they will be more engaged. Using culturally responsive mathematics is important because it allows students to make personal connections to mathematics content [5]. A multicultural approach is not limited to just a person's culture and heritage but their gender, socioeconomic status and community. Teaching students a farming unit has less meaning in an urban setting as it would in a rural community. Knowing your students is key for successful implementation.

The other factor in making sure we as educators use a multicultural approach is that Elementary and Secondary teachers in the United States are not as racially diverse as the population of students they teach [6].

> *Without question, when the majority of students in public schools are students of color and only 18 percent of our teachers are teachers of color, we have an urgent need to act. We've got to understand that all students benefit from teacher diversity. We have strong evidence that students of color benefit from having teachers and leaders who look like them as role models and also benefit from the classroom dynamics that diversity creates. But it is also important for our white students to see teachers of color in leadership roles in their classrooms and communities. The question for the nation is how do we address this quickly and thoughtfully?*

Education Secretary John B. King, Jr., Speaking at Howard University, March 8, 2016.

In the 2011-12 school year only 51 percent of students were White, 16 percent were Black ,24 percent were Hispanic 9 percent of students were Asian or other (Figure 1). In comparison, 82 percent of public school teachers were white, 7 percent were black, 8 percent Hispanic and 3percent were Asian or other (Figure 2).

Figure 1. Percentage distribution of students enrolled in public elementary and secondary schools, by race/ethnicity: Fall 2002, 2012, and 2024

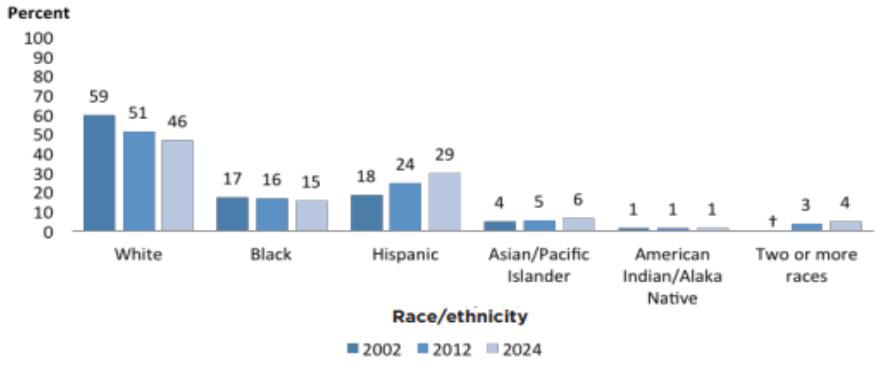
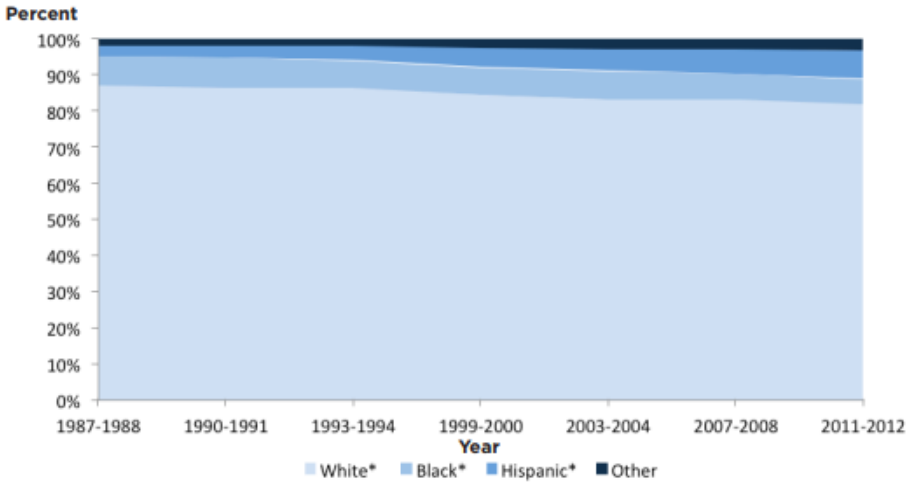


Figure 2. Percentage distribution of teachers in public elementary and secondary schools, by race/ethnicity: Selected years, 1987–88 through 2011–12



How can we reach our students if the majority of educators don't look like them without using a multicultural approach to education? The same goes for showing our students people that look like them in all careers not just race but gender also. This unit is going to provide a way for mathematics educators to enhance their mathematics curriculum with a more culturally diverse approach by connecting the math curriculum to their daily lives Many educators think that you cannot combine mathematics with culture however mathematics lends its self well to understanding and appreciating others cultures. Multicultural mathematics education is for all people, whatever their ethnic/racial heritage, their gender or socioeconomic status [7]. According to Curriculum and Evaluation Standards for School Mathematics [8]. "Students should have numerous and varied experiences related to the cultural, historical, scientific evolution of mathematics so that they can appreciate the role of mathematics in the development of our contemporary society and explore relationships among mathematics and the disciplines they serve: the physical and life sciences the social sciences and the humanities" [8]. In return as the educator you will become more knowledgeable about your student's cultures, the world's culture and the society you live and work in which will help you build stronger classroom connections with your students.

Rationale

For me in a title one school with a large population of Hispanics and African American's its knowing my students culture, getting to know them, their families and the community they live in and provide them ways to connect to the curriculum. Being a white teacher from a middle class background it is harder for students and families to relate to me. This is why it is important for me to know my student's cultural background knowledge; to enhance my curriculum. Using cultural connections will help me make mathematics more meaningful for my students. It will also make the students more aware of other cultures and student differences and similarities within the school.

Background- Demographics

I am currently employed as a first-grade teacher at Winding Springs Elementary located in the North Learning Community of Charlotte Mecklenburg Schools. We are a Title 1 school with a high ESL population. All our students qualify for free breakfast and lunch daily as they are from low income families. Many of our students live in apartments, hotels, trailer parks and housing communities with many of them living in extended families (aunts, uncles, grandparents), not the tradition nuclear family.

Winding Springs is a culturally diverse school, approximately 48% of the students are African American, and 41% are Hispanic, 4% Caucasian and 7% other. We have a population of just less than 900 students in grades K-5. We also have a universal preschool program and a preschool for special needs students which brings our population to near 1,000 students.

My grade level is made up of seven first grade teachers. Six of us team teach with a partner teacher. We are divided up by Literacy and Math, Science, Social Studies. We teach 40 students a day. Team teaching has allowed us to become experts in one area instead of many areas. This has increased the rigor in our classrooms and improved our test scores.

Content Objective

In this unit I plan on using multicultural activities and literature within mathematics to meet both math, literacy and social studies standards. This unit will cover both the first grade social studies standard of cultural diversity and communities, but also multiple common core math standards. Students will be engaged in a variety of hands on activities such as creating shape quilts, making graphs using the students' families information, creating tangrams and looking at patterns to enhance math curriculum through a multicultural lens such as data collection, learning new ways to count, patterns and creating shape quilts. Students will be engaged with children's literature that highlight different cultures and mathematics.

When looking at the unpacking documents for social studies students need to explain how and why neighborhoods and communities change over time. Within the unpacking document it further explains that communities are a group of people bound by or united by commonalities, such as values, beliefs, religion and etc. [9]. Students also need to understand the importance of folklore, celebrations and traditions within their local communities and families and why they are important. Students also need to be able to compare various cultures by understanding languages, customs, beliefs, and traditions. Using these social studies standards will help me drive my math instruction by incorporating these ideas within mathematics.

In this unit I will provide activities and resources to enhance mathematics through social studies. They will provide students will real world activities to assist them in making connections within mathematics. Students are going to be exposed to literacy that focus on cultural and social issues combined with mathematical activities.

Teaching Strategies

There are steps involved in creating a classroom that is culturally conscience. You need to have set up a positive classroom culture so that students feel comfortable talking about personal issues and connections they have with the content.

There are four main goals we as educators need to accomplish to form a culture of community within our classrooms [10]. First, establish a respectful tone. This means to use a respectful voice no matter the situation and to avoid a condescending tone and or sarcasm. Second, to establish a bond with your students. Get to know your students by actively greeting them in the morning when they arrive, talking to them to find out about their lives and interests. Make them feel like what they say matters. Use morning meeting as a way to team build and create a respectful place for communication. Third, creating a classroom community that values all students. Look at your own personal bias by making sure you don't have a pattern for preference. Look for ways to enhance curriculum to teach tolerance. Fourth, help students resolve conflict with others. Use active listening strategies so all students feel heard, allow students to explain their actions feelings with each other and give time to reflect [11.]

As educators we need to recognize and appreciate not only the cultures within our classrooms but outside our classrooms as well. We need to provide materials and experiences that our students can relate too. Look for literature, videos, news articles that are age appropriate such as Time for Kids, music, dance and games. Multicultural education needs to go past celebrating Holidays such as Kwanza and Cinco de Mayo. It is incorporating the value of culture and tolerance every day [11].

This unit is written for a first grade classroom but can be adapted K-2. The lessons are for each of the major common core math strands so that an educator can do one multicultural mathematical lesson/lessons for each major standard. They will include a literacy component and activity and or game. You will find each lesson/lessons outlined by standard. These lessons can also be combined as social studies lessons.

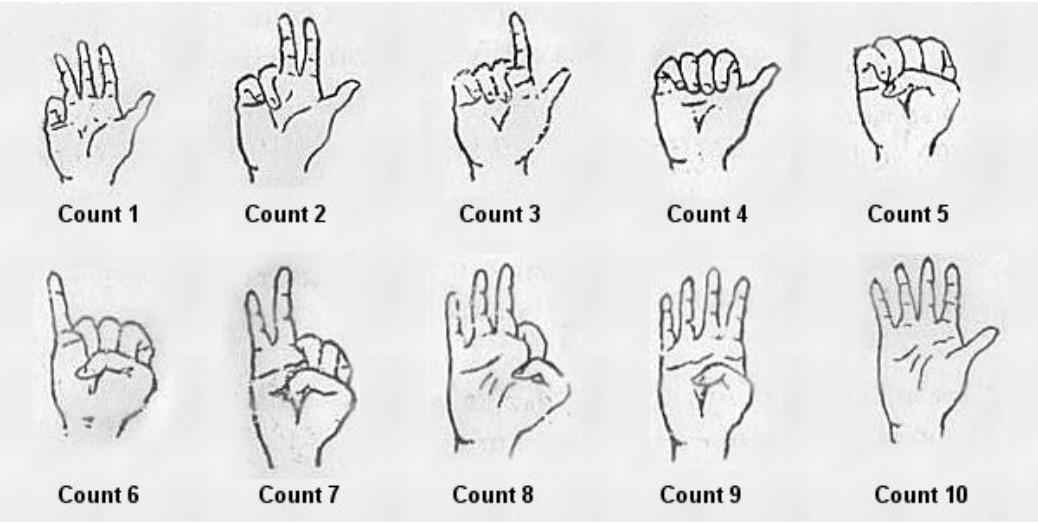
The following is a list of books that can be used for the main math standards. These books can all be found on Amazon. They are a wonderful addition to your classroom library and will help you add a multicultural approach to your math instruction as well as meeting your social studies needs. I plan on doing a donors choose project to add these books to my library.

Lessons

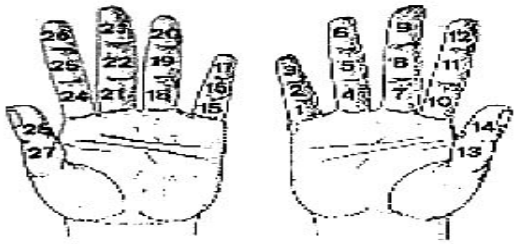
Operations and Algebraic Thinking and Numbers and Operations done in Base 10

One of the first foundation skills in math is counting. Students learn to count (number words), write numbers, and represent numbers. Students often count on their fingers. In many languages

number words are derived directly from the use of fingers. In English eleven and twelve are derived from old English words for "one left and "two left" which means the number left over after counting all ten fingers [7]. Give your students a scenario to get them thinking about counting. Imagine being dropped off in Italy and no one speaks your language and you are at the market and want to buy 8 apples. How do you tell them? Let the students think about how they would communicate their need for 8 apples and after they had some time to think about it. How many used fingers? Did they all show 8 the same way? Have the students share how they represented 8 on their fingers. Many cultures count on their fingers in different ways. In India they can count to 15 on each hand because they count their joints or parts of hand [7]. Show students this image without the numbers (Figure 1 appendix 3) and have them figure out what numbers they represent. Have them share their thoughts and show them (Figure 2 appendix 3) with the numbers on the hands?



http://pazhayathu.blogspot.com/2010/04/story-of-computers.html?_sm_au_=iVVqm4MD7VjnRLpV



This will prompt a discussion on how other cultures represent number on their fingers. Show them that in India they can count to 28 on their fingers by counting parts of their fingers

In some cultures, such as Papua New Guinea and the Torres Straits Island used their whole body to count to 41 using various body parts such as nose, eyes, hips, joints and other parts of the body. (See figure 4) Challenge students to develop their own counting system. How high can they count? Use the children's literature from the Operations and Algebraic Thinking and Numbers and Operations done in Base 10 list of books to enhance your math curriculum. Students can learn to count to ten in different languages. Some students may be able to share how to count to ten in their native language.

To connect the students further to mathematics you can write word problems that represent your student's cultures, interests and communities. When students are represented within the

classroom they will be more engaged. To extend this activity have students write their own word problems.

Measurement and Data

Collecting student information to use in class is a smart way to make the students feel more connected to the material. Data analysis involved many aspects of math including sorting data points, researching the topic, and number sense as they analyze the data. [7]. This is also a good way to bring parents and the community into your curriculum. You can look at relevant issues to your students such as student heritage (foods, traditions, music etc.) environmental issues, transportation, water and just a few to name. Students can use data to solve problems relevant to them. For this unit we will be specifically focused on types of foods students eat at home because as first graders we are just starting out reading graphs such as a bar graph, pictograph, tally charts. By collecting data that is relevant to the students then will be more connected to the lessons and the discussions based on the data. I have provided a list of books that you can use during this topic in appendix 2. By reading the books of the different foods that people eat across the world will open up the discussion to what students eat at home. You could also connect parents by having them share their children's favorite recipes, pictures of the foods they eat and if you are allowed food sampling have parents send in food. For the purpose of this lesson send home a letter asking for pictures of the student's favorite foods. This can be photographs or cut outs from magazines.

Using the pictures, the students bring in of the food they like to eat lay them out on the floor while the students sit in a circle. Let them move the pictures around to sort them in an order that makes sense to them. Guide the discussion into why did the sort them like that? Ask them questions based on the data such as how many more people or how many fewer people choose ___ for their favorite food? Which food was chosen the most/least? Imagine if someone came in the room, could they look at the floor graph the students made and figure out what it is about? Create a title for your graph using paper and you can even separate the parts the students made with tape. Suddenly the pictures they sorted have turned into a graph. You can then show them other types of graphs on the smartboard /projector or as a poster. (Appendix 4) You can extend this activity to social studies by having students research where their favorite foods are from and the culture that the foods are eaten.

You can extend data collecting throughout the entire school year. A good place to do this is morning meeting. When students enter have them answer different questions that you can then discuss during circle time. You can use counting bears, pop cubes, magnets or other objects to have students answer in graph form. You can also use a balance for yes no questions. This is a good way to build community within your classroom.

Geometry / Patterns

Geometric patterns our found throughout the world not only as art but in items of everyday use items such as pottery, quilts, baskets, and textiles. They can also be found on masks for ceremonies,

carvings, religious items, and architectural designs. Many of these designs have deep rooted meanings in cultures. Allowing students to use math and art together will give them a deeper connection.

In first grade students are learning basic shapes such as squares, rectangles, rhombuses, triangles, trapezoids, hexagons and circles. Having students bring in items from home that have geometric designs on them is one way to have them analyze shapes. Students can look for shapes in the designs, discover basic attributes such as sides and vertices. Using pictures of geometric designs cards (appendix 5) have the students sort them in groups by their own rules. Have students share out why they sorted them that way. Ask them to try another way. See how many ways they can sort the cards.

Reading stories such as The Patchwork Quilt and Grandfathers Tang's Story will give students another look at geometric designs. To extend learning to home have student's families design a paper quilt square using construction paper cut outs of squares, Students can get 10 squares of one color and 10 of another color. They may cut them into triangles or rectangles to make them into other shapes (appendix 5). When the students bring them in you can attach them to a large butcher paper to make a class quilt. Students can analyze the patterns each student created.

After reading Grandfathers Tang's story provide students tangrams so that they can create their own designs of animals. Have students do a gallery walk to analyze their classmate's creations. Take pictures of student's creations as tracing them can be difficult for many of them. Turn them into tangram mats that student can fill in during center times.

You can also create patterns using names. Reading stories such as the Name Jar and Rene` has Two Last names will set the students up to discuss how names can be made into a pattern. Using appendix 6 students can create a pattern of their name by repeating their name in the squares over and over until the squares are full. Students can analyze their name patterns. When they are complete students can do a gallery walk to look at the other name patterns.

Appendix 1 Implementing Teaching Standards

Mathematics

Represent and solve problems involving addition and subtraction.
CCSS.MATH.CONTENT.1.OA.A.1
Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[1]

CCSS.MATH.CONTENT.1.OA.A.2
Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Extend the counting sequence.
CCSS.MATH.CONTENT.1.NBT.A.1
Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.
CCSS.MATH.CONTENT.1.NBT.B.2
Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

CCSS.MATH.CONTENT.1.NBT.B.2.A
10 can be thought of as a bundle of ten ones − called a "ten."

CCSS.MATH.CONTENT.1.NBT.B.2.B
The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

CCSS.MATH.CONTENT.1.NBT.B.2.C
The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

Represent and interpret data.
CCSS.MATH.CONTENT.1.MD.C.4
Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Reason with shapes and their attributes.
CCSS.MATH.CONTENT.1.G.A.1
Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-

defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

CCSS.MATH.CONTENT.1.G.A.2
Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[1]

CCSS.MATH.CONTENT.1.G.A.3
Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of, fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Social Studies

NC SOCIAL STUDIES 1.H.1.2

Explain the importance of folklore and celebrations and their impact on local

The student will understand: • Folklore and celebrations may originate from historical references and events. • Folklore and celebrations may influence the norms and traditions of local communities.

NC SOCIAL STUDIES 1.H.1.3

Explain why national holidays are celebrated (Constitution Day, Independence Day, Martin Luther King, Jr., Memorial Day, Presidents' Day, etc.).

• National holidays are often celebrated to honor people and events significant to a people's culture and/or history. • National holidays, traditions, places and people help to provide identity for the community and nation.

NC SOCIAL STUDIES 1.C.1.1

Compare the languages, traditions, and holidays of various cultures.

The student will understand: • People's lives are often shaped by different values and traditions. • Diverse languages, traditions and holidays may contribute to the development of a people's values and beliefs. The student will know: • Individual differences in languages, beliefs and customs that may be unique to one's culture. • Comparisons of the beliefs, customs, ceremonies, traditions and social practices of the varied cultures in their local community. • Comparisons of how people from other cultures live, work and play. • Similarities and differences in the ways various cultures address human needs and concerns

NC SOCIAL STUDIES 1.C.1.2

Use literature to help people understand diverse cultures.

The student will understand: • Literature often illustrates the values and beliefs of diverse cultures. • Literature often reveals the origins of a culture's values and beliefs. The student will know: • How exposure to other cultures through literature can promote cultural awareness and tolerance. • Examples of literature, art and music in diverse culture

Appendix 2

Classroom Resources by Standard

Operations and Algebraic Thinking and Numbers and Operations done in Base 10

Feast for 10 by Cathryn Falwell

Moja Means One by Muriel Feelings and Tom Feelings

Moja,Mbili, Tatu by Alice Rottersman

Count on Your Fingers African Style by Claudia Zaslavsky

We all went on a Safari by Laurie Krebs and Julia Cairns

La Llotona by Patty Rodriguez and Ariana Stein

Fiesta by Ginger Foglesong Guy

Granny went to the Market by Stella Blackstone and Christopher Corr

Measurement and Data

Feast for 10 by Cathryn Falwell

I lost my tooth in Africa by Penda Diakite`

Big Mama and Grandma Ghana by Angelea Shelf Medearis

Geometry / Patterns

Tortillas are Round by Rosanne Greenfirld Thong

The Name Jar by Yangsook Choi

Rene' Has Two Last Names by Rene Colato Laniez

The Patchwork Quilt

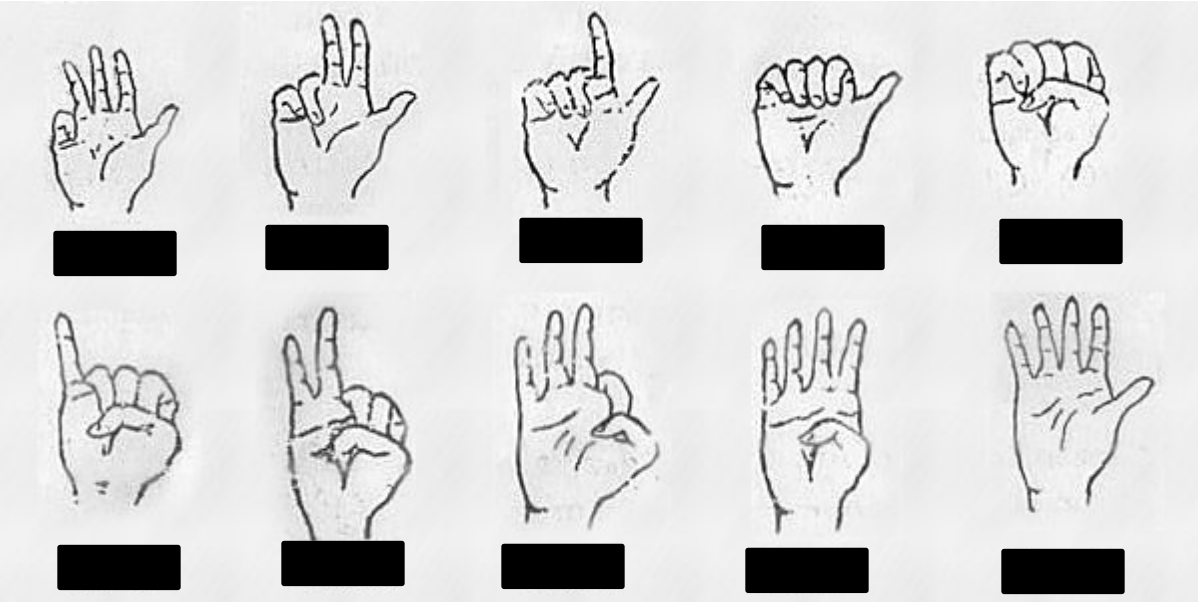
Grandfathers Tang's Story

The Village of Round and Square Houses

I would also recommend reading The Multicultural Math Classroom by Claudia Zaslavsky to get you started with how to use multicultural math within your classroom. There are many wonderful ideas and some history of mathematics that I found intriguing.

Appendix 3

Figure 1



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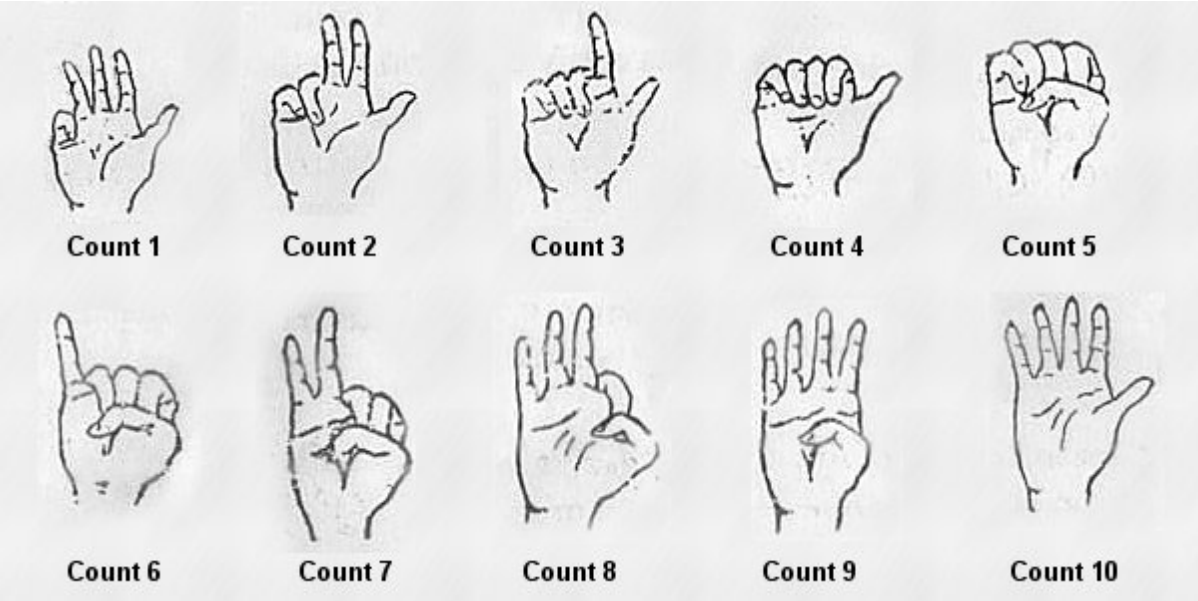
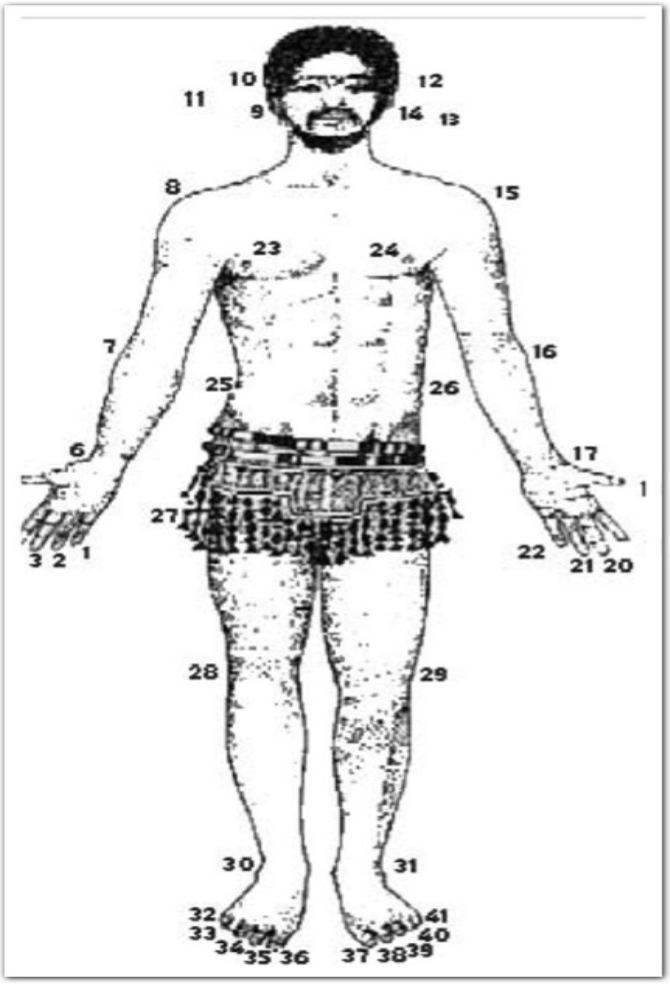


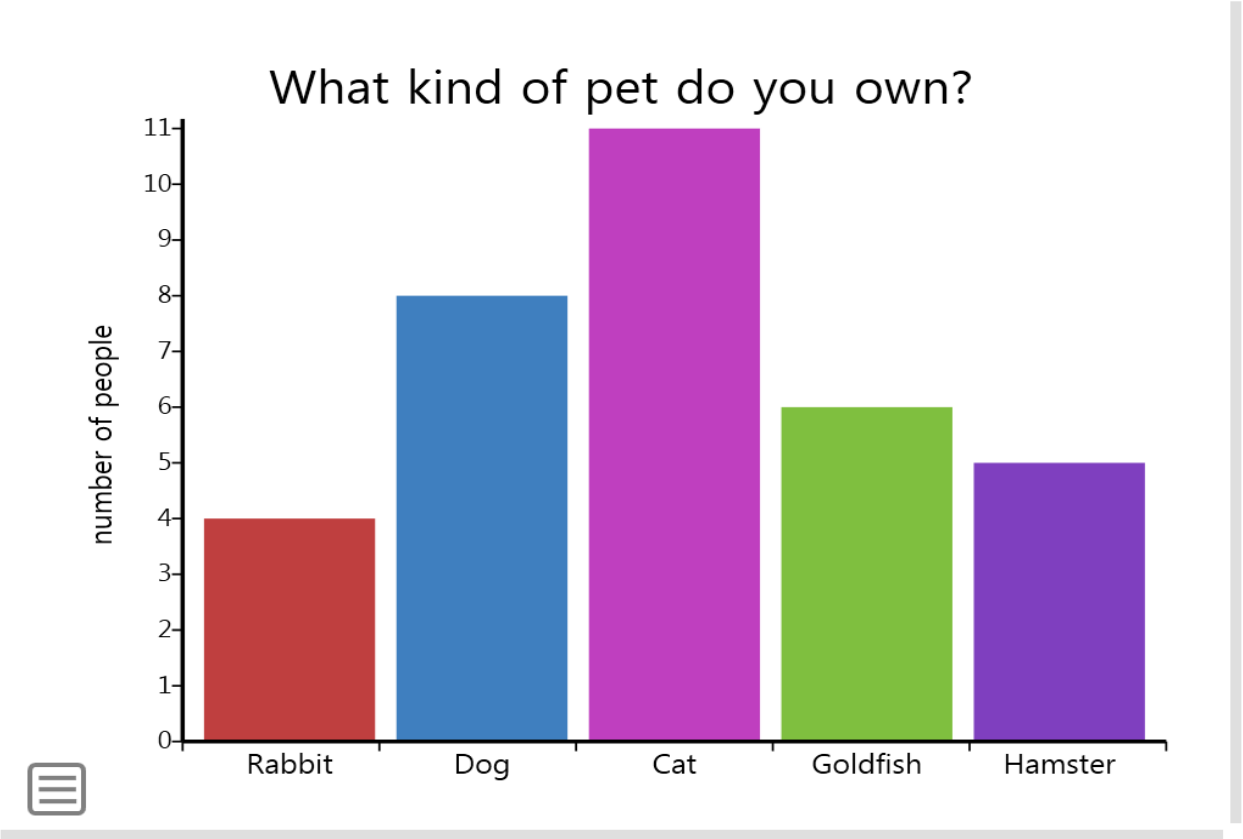
Figure 2

http://www.namboothiri.com/articles/counting.ht

Figure3&4 http://www.namboothiri.com/articles/counting.htm



Appendix 4

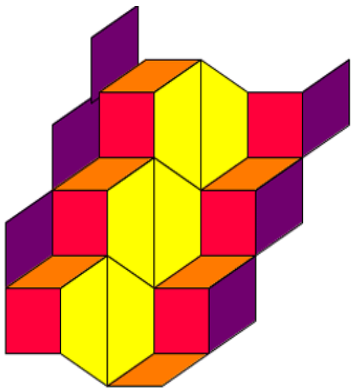
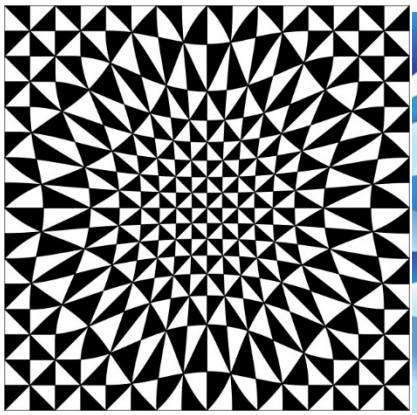
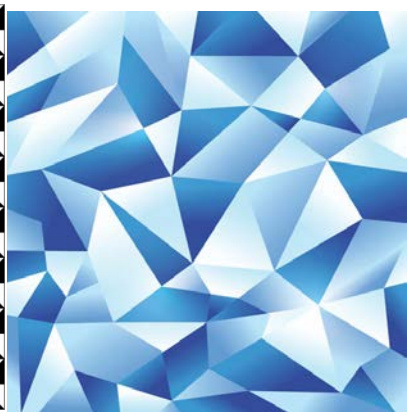
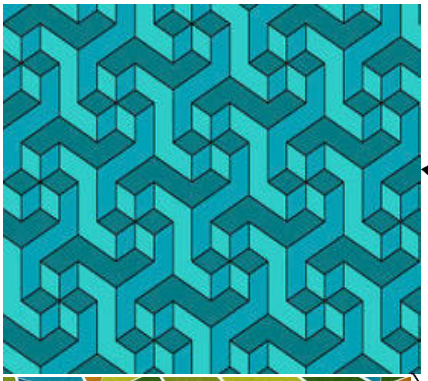
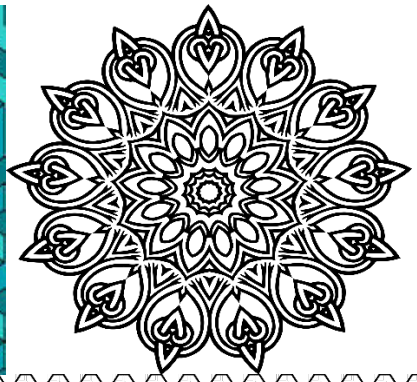
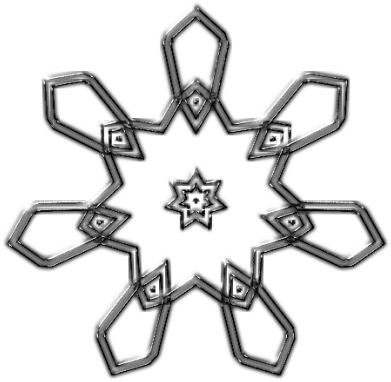


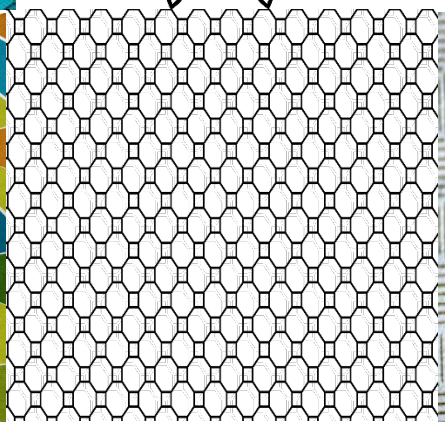
https://sites.google.com/a/hdsb.ca/ms-parker-s-class-website/data-management/bargraphsanddoublebargraphs

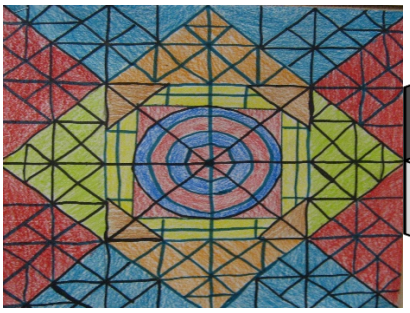
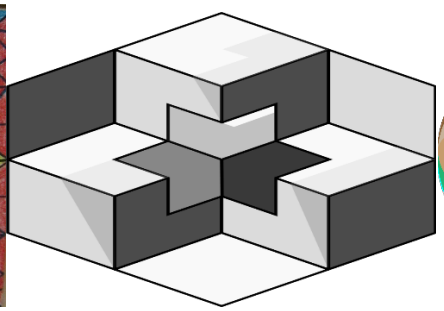
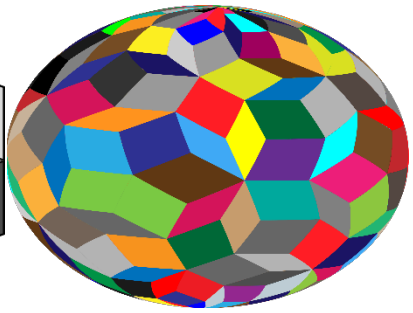
Modes	School-going children
Auto-rickshaw	
Car	
Bicycle	
Bus	
On foot	

http://www.math-only-math.com/examples-of-pictographs.html

Appendix 5



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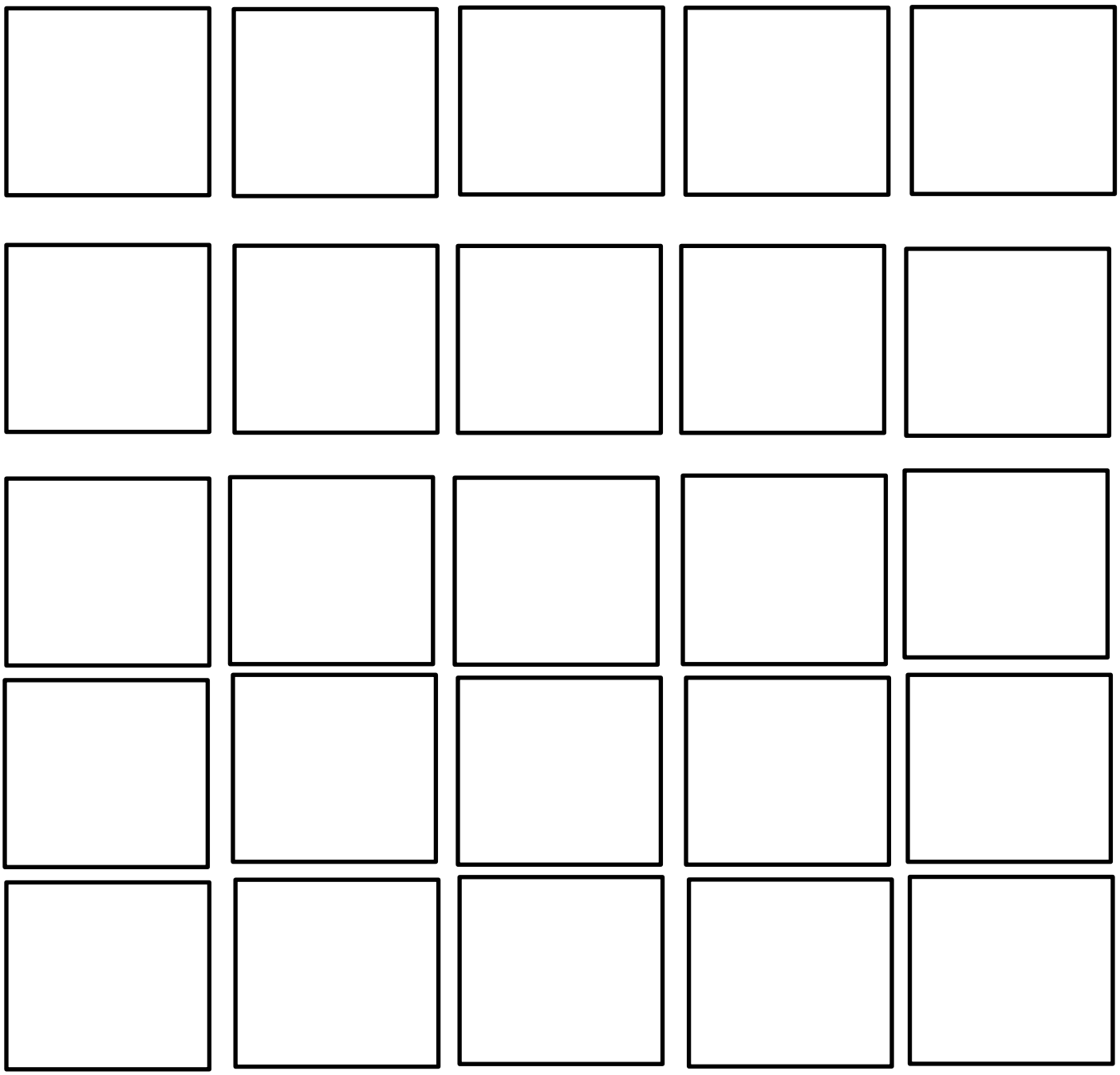


Appendix 6

My Name Pattern

Appendix 7

Assessment

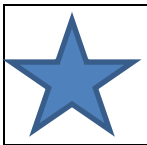
A great way to assess students learning is through journal writing. I have provided several writing prompts and a rubric to score each one. Students are scored on a 1, 2 or 3-star answer.

Name_____Date_____

	Does not answer with a complete sentence.
	Turns the question around to respond in a complete sentence.
	Turns the question around to respond in a complete sentence. Provides details.

1. How can you communicate a number with someone who does not speak your language? Give an example.
2. How does a graph help you interpret information? Give an example.
3. What are the attributes of a triangle? Give an example. What are the attributes of a quadrilateral? Give an example.

Example How can you communicate a number with someone who does not speak your language? Give an example.

	I can use my fingers.
	I can communicate a number with someone who does not speak my language by using my fingers.
	I can communicate a number with someone who does not speak my language by using my fingers. If I wanted to get 4 apples I could show 4 fingers to represent the number.

Notes

[1]Blake,Smeyers,Smith Standish 2002

[2]Uy,Fredrick

[3]Egalite & Kisida 2015.

[4]Orey & Rosa 2011

[5]Blake, Nigel. 2010

[6] US Department of Education 2016

[7] Zaslavsky,1996

[8]NCTM,1989

[9]NC DPI 20013

[10] Blake, Nigel 2010

[11] Blake, Smeyers, Smith ,Standish 2002

[12] http://www.dpi.state.nc.us/curriculum/.

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Blake, Nigel. The Blackwell guide to the philosophy of education. Malden Mass.: Blackwell, 2010.

This article provides a general knowledge of the philosophy of using multicultural education within the classroom.

Calicut, Namboothiri Websites. Counting Numbers with Fingers. Accessed October 27, 2017. http://www.namboothiri.com/articles/counting.htm.

This website offers some history of math and pictures of how different cultures use math.

Egalite, Anna , and Brian Kisida. "The Effects of Teacher Match on Academic Perceptions and Attitudes." 2015. https://ced.ncsu.edu/wp-content/uploads/2015/07/Egalite-Kisida-Teacher-Match-Working-Paper-June-2016.pdf.

This article provides data and information on how ethnicity plays a role in student teacher relationships and academics.

Esmonde, Indigo, and Beverly Caswell. "Teaching Mathematics for Social Justice in Multicultural, Multilingual Elementary Classrooms." *Canadian Journal for Science, Mathematics, and TechnologyEducation*10,no.3,244-54. https://tspace.library.utoronto.ca/bitstream/1807/32372/3/EsmondeCaswellPrinciplesFINAL.pdf.

This article will provide information on how to teach students to solve social issues using math. There are many ideas for multiple grade levels.

Harding-Dekam, Jenni L. "Defining culturally responsive teaching: The case of mathematics." Cogent Education1, no. 1 (2014). doi:10.1080/2331186x.2014.972676

This is a resource to start implementing a classroom that values culture.

"K-12 Standards Curriculum and Instruction." Accessed November 09, 2017. http://www.dpi.state.nc.us/curriculum/.

NC state standards for all subject areas in all grade levels.

"NCTM Journals Sessions at the NCTM Annual Meeting and Exposition." *Teaching Children Mathematics*20, no. 7 (2016): 453. doi:10.5951/teacchilmath.22.8.0487.

This article gives information and a lesson on how to teach culture within mathematics.

Stemn, Blidi S. "Teaching mathematics though cultural eyes." *Race, Gender ,Class*12, no. 1-2 (2010): 154-61. Accessed October 10, 2017. Http://commons.hostos.cuny.edu/ctl/wp-content/uploads/sites/26/2015/09/Teaching-Math.pdf.

This article gives information and a lesson on how to teach culture within mathematics.

"The State of Racial Diversity in the Educator Workforce." Accessed October 27, 2017. https://www.bing.com/cr?IG=BABA734212CA495F9684BF7DA03C1DC6&CID=08C41932EA8D636F0149121AEB8B625E&rd=1&h=UfObCx1R5SPwsCSQekn7Wbx1sBbQeehLBM2JC9N7cIs&v=1&r=https%3a%2f%2fwww2.ed.gov%2frschstat%2feval%2fhighered%2fracial-diversity%2fstate-racial-diversity-workforce.pdf&p=DevEx,5065.1.

This article provides data and statistics of students and teachers ethnicity.

Uy, Frederick L. "Teaching mathematics concepts using a multicultural approach." *California State University, Los Angeles. Retrieve on September* 1 (2017).

This article provides reasons why teaching with a multicultural approach is important for out students.

Zaslavsky, Claudia. *Multicultural math: hands-on math activities from around the world*. New York: Scholastic Professional Books, 1994.

This book offers a plethora of information of how to combine culture within mathematics. The author offers detail lesson ideas as well as the history of math in many cultures.