

# Parents

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## **Our Math Education System Is Failing Black Kids — Is Ethnomathematics the Solution?**

Returning to traditional and cultural learning styles could help narrow growing education gaps between Black and white children.

By [Pamela Appea](#) Updated on March 15, 2023

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Have you ever heard of African strategy games like oware or mancala? Played achi or bid whist, the card game? Have you admired the precise symmetrical designs embedded within an Adinkra cloth? Or looked at the symmetry of a plant or flower? Have you marveled at the aerial views or renderings of the architectural designs of a traditional sub-Saharan African village?

All of these are actually examples of African Diaspora ethnomathematics and it presents an opportunity for teachers to integrate math and history into classrooms in ways that can empower Black children. Empowering Black

kids in class matters, especially in light of [new information about education gaps](#).

## **What is ethnomathematics? What are fractals?**

Ethnomathematics is the study of how different people, in different cultures, use mathematics and mathematical principles. African Diaspora Ethnomathematics focuses on this field of mathematics by incorporating interdisciplinary learning concepts that tie into the long, rich history of the African Diaspora.

Fractals are one subset of ethnomathematics. They are complex patterns that repeat infinitely, creating a continuous feedback loop. Fractal-based learning can run the gamut from fractals in math, fractals in shapes, fractals in 3-D models, fractals in nature, fractals in physical structures, fractals in sound, fractals in time and in fact the list can go on and on, kind of like a fractal. (Math pun!)

When fractals are considered from an Afrocentric perspective, they can be a fundamental building block toward an interdisciplinary way of learning.

“Fractals are a geometric concept used by mathematicians and others in design, as they consist of an ongoing pattern

that can be recognized. Fractals have been utilized far back in ancient African societies to design clothing, urban planning, and artwork meant to teach messages to the community,” says Akil L. Parker, M.Ed., a professor at Cheyney University and longtime former Philadelphia public school math teacher. A member of the National Association of Mathematicians, Parker is also the founder of [All This Math](#), an educational services company geared toward K-12 students.

“An awareness of history and math knowledge, including fractals knowledge, provides a racial esteem that would motivate a child to want to carry on the tradition of his/her ancestors,” Parker says.

## **Linked to Our Cultures**

The term "ethnomathematics"<sup>1</sup> was originally coined by Brazilian mathematician Ubiratan D’Ambrosio in 1977. And one of the African-American pioneers of ethnomathematics was the late Dr. Gloria F. Gilmer, Ph.D., a Black mathematician and educator. Dr. Gilmer went on to co-found the International Study Group on Ethnomathematics (ISGEm) in 1985, along with D’Ambrosio, Gil Cuevas, and Rick Scott.

“An African fractal is a mathematical intricacy that is based on specific African cultures. Part of the reason we want to

have an interest in these, not everything that we see has a Eurocentric origin. African fractals allow us to decolonize our thinking,” says Dr. Edray Goins, Ph.D., professor of mathematics and statistics at Pomona College in California.

According to Dr. Goins, unfortunately, most people do not know about mathematician pioneers like Dr. Gilmer. Dr. Gilmer’s research on fractals included *Mathematical Patterns in African American Hairstyles*. Braiders often used geometric fractal patterns found in nature. And using a mathematical term, called tessellations, means that braiders repeat the same patterns again and again, according to Dr. Gilmer’s research.

Dr. Goins is also a proponent of math education being accessible to all youth, including youth of color. When it comes to math education generally speaking, Dr. Goins emphasizes that learning about any kind of math education, including learning about fractals and other topics should start early, meeting the younger generation where they are at, including potentially incorporating video games and simple math strategy games, including both screen and non-screen related learning.

## **Making Math Education Relevant**

“February is Black History Month, March is Women’s History Month and April is Math Awareness Month,” says Jaime Desormeaux, M.S., a veteran high school geometry teacher who has degrees from Dartmouth College, City College of New York and Bank Street College of Education.

Desormeaux says that she aims to connect learning to what’s happening in the real world with interdisciplinary assignments that connect history, culture, and math together.

“When it comes to mathematics and mathematicians, we are practical. We are trying to solve a problem relating to the things that we do in order to live our lives,” says Desormeaux. One recent math project she assigned to her students was a quilting math assignment where students designed and drew quilts, drawing from Central and South American, and African traditions.

“In order to be good with math, you need to be curious,” says Desormeaux. She says parents and educators can enrich a child’s early math years by emphasizing—and modeling— skills including decoding skills, reading skills, and fine motor skills like being able to sit down and color, draw, and even engage in pretend games.

“Math is not only about completing addition or subtraction problems, but in finding the math in our everyday lives, whether it’s looking at a leaf in the fall and talking about symmetry or working to understand numbers and symbolism,” she says.

## **Math As a Tool for Liberation**

Parker makes a point to teach K-12 children about the importance of math through an Afrocentric lens.

“There are also many stumbling blocks in terms of mathematics being what I term an "accepted deficiency" where many parents and elders unwittingly transfer a fear and disregard for mathematics to children that they love and care for. Also, math requires consistent practice and there is no ‘math gene’ as many people believe there to be,” Parker says.

Parents can also take an active role in teaching their children about math by speaking positively about math at home, Parker says. He maintains when parents who may never have excelled at math themselves speak about not having a “math gene,” for example, they discourage children and they should be encouraging them.

There are many important public figures within the math world, who parents can learn about with their children, ranging from Benjamin Banneker, a self-taught mathematician, naturalist, and astronomer who invented the first hourly wooden clock in the U.S., to J. Dr. Ernest Wilkins, Jr., a former child prodigy who graduated college at age 13 and went on to become a nuclear scientist, mechanical engineer, and mathematician.

“I see math as an essential tool for liberation as it is a very efficient method of developing critical thinking skills and consequential thinking ability that are all relevant for problem-solving,” says Parker.