**CAAASA-San Diego County Office of Education**

**Professional Development Plan**

**for**

**Enhancing Mathematics Achievement for**

**African American Students**

***Overview:***

**All Mathematics PD is delivered in-person** with James and/or Wesson.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cost Summary** |  |  |  |  |  |  |  |  |  |
|   | **Session #1**  | **Session #2** | **Session #3** | **Session #4** | **Session #5** | **Session #6** | **Session 7 FMN #1** | **Session 8 FMN #2** | ***Total*** |
| ***Option #1*** |  |  |  |  |  |  |  |  |  |
| Indirect costs (20% CAAASA) | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 | 1590 | 1590 | 10860 |
| Total cost | 7680 | 7680 | 7680 | 7680 | 7680 | 7680 | 8640 | 8640 | 63360 |
|  |  |  |  |  |  |  |  |  |  |
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There are a total of **eight PD sessions** for improving math achievement for African American students.

1. Equity in Equations
2. The MASTER Approach to Teaching and Learning Mathematics
3. Combining Like Terms: Common Challenges in Teaching and Learning Mathematics
4. Your brain on math: Foundations for Mathematical Understanding
5. “Selling” Math: Engaging Students in Explorations of Self
6. Applying 21st Century Instructional Strategies for Learning Mathematics

7. Family Math Night: “Bringing Life to Numbers”

8. Family Math Night: “Discovering Mathematics In your World.”

*Customization and flexibility:*

* Recognizing that each school district often has its own professional development plans for the academic year. Some allow for PD during the school day with substitutes provided. Others restrict professional development to Wednesday afternoons (or every other Wednesday afternoon) from 1:00 PM to 3:00 PM, for example. We are open to providing professional development at a fixed time (e.g., second and fourth Thursdays from 1:00- 3:00 PM) with each participating school district.
* Since the needs of each school district may vary, we can work with the math leadership team to focus on additional topics that may be of greater concern, which are having a negative impact on mathematics achievement for their African Americans students. These may include (a) effective instruction for specific math content or skills, or (b) unique challenges of African American students not directly related to mathematics content. These customized sessions can be planned in collaboration with the CAAASA Math Consultants and include a Root Cause Analysis to isolate the precise challenge and its optimal solution. Costs for customized sessions will reflect the average session cost ($7,680) + research & prep ($2,000).
* For the 2024-2025 academic year, the list of PD sessions will be expanded to eight instructional sessions and two parent engagement sessions.

**CAAASA-San Diego County Office of Education**

**Professional Development Plan**

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**African American Students**

The California Association of African American Superintendents and Administrators (CAAASA) has proposed a partnership with the San Diego County Office of Education to deliver a professional development package to address the challenge of improving mathematics achievement for African American students. Our plan is to work with three San Diego County school districts.

**Goal:** To promote better practices in mathematics classrooms in ways that will benefit achievement for African American students. Educators will learn (1) instructional strategies for effective mathematics teaching, and (2) the science of mathematical understanding.

**Our philosophy:** Mathematics is not about memorization. Math is a way of thinking about quantities, patterns, and relationships. When students learn how to think mathematically rather than memorizing algorithms, their attitude about math improves, as well as their math proficiency. Teachers who genuinely believe that *all* students can learn and achieve in mathematics, have students who actually do learn and achieve.

**PD options:** There are three Mathematics Professional Development (PD) options available to San Diego County schools. (Appendix A provides a breakdown of line item costs in each of these options.) Additional customized sessions can be crafted in collaboration with the CAAASA Math Consultants.

**CAAASA Presenters:** Lybroan James and Kenneth Wesson are CAAASA Math Consultants with over 50 years of combined experience working in the areas of classroom instruction (from the elementary grades to higher education), academic coaching, professional development (throughout the US and overseas), and educational product development. (See Appendix B for a list of organizations, institutions, and conferences where James and Wesson have presented).

***Websites and contact information:***

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Each package will cover the same eight units of content. What distinguishes the options is their delivery format:

1. **In-person Professional Development** (with James and Wesson)
	1. *Location (three options):*
		1. The San Diego County Office of Education for all three school districts
		2. At a professional development site located in one of the three school districts with the other two school districts joining
		3. At a site to be determined by each of the school districts, where PD will take place exclusively for members of the host school district.
	2. *Length of time:*
		1. Each professional development session will offer 90-120 minutes -- lecture, applications, breakout groups, peer-to-peer learning, and wrap-up activities.
		2. Each session ends with
			* discussion and reflections on student learning
			* discussion and reflections on instruction in math
			* written: classroom applications
			* preview and pre-work for next PD session
	3. *The content focus will center on:*
		1. strategies for teaching mathematics effectively
		2. A Root Cause Analysis (RCA) of African American student achievement in mathematics
		3. A teacher’s Math mindset
		4. A student’s math mindset
		5. How the brain learns and how the brain learns mathematics
	4. *Date and time:*
		1. Dates (TBD): twice each month beginning in the spring semester of the 2022-2023 school year and continuing throughout the 2023-2024 academic year.
		2. Times:
			* A designated weekday for a block of 2 hours (minimum)
			* Wednesday afternoons (early release day) from 1:30 PM - 3:30 PM.

**All professional development will address the following content:**

* + - *Strategies and best-practices for teaching mathematics effectively*
		- *Root Cause Analysis (RCA) of African American student achievement in mathematics*
		- *Teachers’ math mindsets*
		- *Students’ math mindsets*
		- *How the brain learns and how the brain learns mathematics*

*The title and overview for each of the eight Mathematics Professional Development sessions are as follows:*

**PD Session** **#1. Equity in Equations**

This session will focus on tracking in mathematics, the impact of standardized tests and IQ tests on marginalized students, especially African American students and other students of color. Through pre-work, pre-reading, and written reflections, we will examine the root causes of these disparities and the role of stereotypes, internalization, and cultural deprivation in shaping students’ experiences in the math classroom. We will also explore the contributions of people of color in mathematics and the importance of cultural relevance in fostering a more equitable learning environment.

Using a framework for equity in math, we will examine practices such as releasing and sharing control through scaffolding and questioning, and expecting more through asset-based learning. We will discuss what works and what lasts in promoting mathematical growth, and the importance of teacher messages about mistakes in math. The PD session will also focus on productive struggle and perseverance, emphasizing that low-level exercises do not lead to mathematical growth. By the end of this session, participants will have a deeper understanding of the challenges facing marginalized students in math, and the strategies that can be deployed to promote equity and excellence in the classroom.

**PD Session #****2.** **The MASTER Approach to Teaching and Learning Mathematics**

This session will introduce the MASTER approach, “Making Academics Social, Transformative, Engaging, and Rigorous” in mathematics. Through pre-work, pre-reading, and materials preparation, we will explore the Pyramid of Learning and CFU. This workshop will focus on the impact of mindsets in mathematics and how emotions affect learning. Participants will learn about the neuroscience of emotions and how to overcome the fear of mathematics and deflected behaviors. This session will also explore the importance of nursing self-efficacy and the concept of autonomy in mathematics.

Additionally, this session will focus on the importance of real-world problem solving and *whose* real-world is being considered when problems in mathematics are selected. Finally, this session will discuss Ethnomathematics and provide access to mathematical competency for all students. By the end of the session, participants will have a deeper understanding of the MASTER approach and strategies to make mathematics social, transformative, engaging, and rigorous for all students.

**PD Session #****3. Combining Like Terms: Common Challenges in**

**Teaching and Learning Mathematics**

This session will focus on the challenges of teaching and learning mathematics, specifically when it comes to combining like terms. We will explore the concept of math as a “foreign language” in the classroom and the intersection of math and language. We will examine the use of journaling in mathematics as a nonpunitive way to improve mathematical understanding and recognizing the importance of languaging in the math classroom, including speaking, listening, reading, and writing in mathematics. Participants will learn about the benefits of brainstorming and collaborative learning, as well as the importance of sense-making in mathematics by using language.

This workshop will also focus on mathematical discussion time, the use of “in your own words” and “how do you know?” to check answers and student work, and for constructing arguments. By the end of the session, participants will have a deeper understanding of the common challenges of teaching and learning mathematics, and strategies to overcome those challenges, specifically when it comes to combining like terms.

**PD Session #****4. Your brain on math: Foundations for Mathematical Understanding**

This session is designed to help participants develop an understanding of how the brain processes mathematical notions. The session focuses on teaching students to think mathematically (including visualization) and to understand the process of how the brain learns to manipulate numbers. It will cover the steps of moving from the “concrete” to the “visual” to the “symbolic” in mathematics and will emphasize the importance of learning from mistakes (one of the best teachers in math) rather than fearing them.

This workshop includes the use of language to make math makes sense in mathematics and encourages participants to ask “thinking questions” to help them understand what they know and what they need to know to solve a problem. This session also stresses the importance of student interactions and encourages collaboration and diversity in thinking among learners. Mathematical puzzles, brainteasers, and activities are used to promote socialization and learning from one another. The session also covers the use of modeling and visualization for mathematical thinking, teaching students to “see and feel” quantities, which helps them understand mathematical concepts in a visual and symbolic manner. This enhances their overall mathematical understanding and helps them make connections between mathematical concepts and real-life.

**PD Session #****5. “Selling” Math: Engaging Students in Explorations of Self**

This session will focus on engaging students in expirations aspirations of self through the use of research-based sales techniques applied to math instruction. The pre-work for this session will include prereading and materials preparation, where teachers will read and watch sales and advertising content, reflect on how they felt about the content, and share their experiences of how they have been sold education and how they have sold math education to their students. This session will explore the concept of creating buy-in from students and keeping them engaged by constantly answering the question “WHY?” By the end of the course, participants will have a deeper understanding of how to sell math to students and engaged them in self-exploration through the use of sales techniques.

**PD Session #6.** **Applying 21st Century Instructional Strategies for Learning Mathematics**

This session will focus on 21st century instruction and learning in mathematics, with a special emphasis on promoting equity for African American students. The pre-work for this session will include prereading and materials preparation. This workshop session will cover the following topics:

1. Arranging the classroom for interactive learning and understanding the concept that knowledge is “co-constructed.”
2. The four C’s (plus two) which include **c**ritical thinking, **c**ommunication, **c**ollaboration, and **c**reativity along with making **c**onnections and a focus on selecting effective **c**urricula.
3. The importance of mathematical thinking, and understanding the connection between math and science, with a focus on quantifying phenomena.
4. The use of concrete foundations, visual and verbal representations, and symbolic representations to teach mathematics.
5. Reflecting on past challenges and successes in teaching 21st-century learning to all students and specifically to African American students. This session will also focus on understanding “what works, what lasts, and why?” we know that our teaching was effective by analyzing student work.

By the end of the course, participants will have a deeper understanding of how to create an equitable learning environment for all students, particularly African American students, and will have the skills and strategies necessary to implement 21st-century instruction and learning in mathematics.

**PD session #****7. Family Math Night (FMN):** (James and Wesson) designed for

parents/caregivers, students, and teachers

**FMN #1** - “Bringing Life to Numbers”

**PD session #****8. Family Math Night** (James and Wesson

**FMN #2** - “Discovering Mathematics In your World.”

***Each Mathematics PD session for educators includes the following:***

* Introduction to the topic (15-minute conversation/lecture)
* Examples of how the topic can/should be effectively taught to promote equity with African American students in mind.
* Mathematical thinking
* Concrete foundations of math
* Visual and verbal representations (including drawings)
* Symbolic representations (including drawings)
* Sense-making (speaking and writing) and/or procedures.
* Evidence or proof (analysis of error)
* *Now try this!” Questions, applications and self-assessment*
	+ A questions or problem to answer or solve.
	+ Common challenges
		- How do I teach this concept or skill?
		- How have I taught this concept or skill in the past?
		- What evidence do I have that it was taught successfully?
		- Troubleshooting: With the information shared, how will you teach it differently in the future?
* What challenges have you had in teaching this concept or skill in the past:
	+ To all students?
	+ To AA students specifically?
* What worked? What lasted? How do you know? What evidence do you have indicating that (a) your teaching efforts are working, (b) that what students have learned has lasted (was remembered), and (c) that student have learned how to transfer or apply what they have learned later?
* What have I learned from this session?
* ***Written summation:*** Write the following “I will” statements on what you will do differently having participated in this PD session.
	+ I will apply the new information and/or tools that I have learned in this session by….”
	+ I will \_\_\_\_\_ differently by….”
	+ I will apply what I’ve learned from this session constructing Mathematics lesson plans in the future that…
	+ I will incorporate the five areas of mathematical thinking in the following ways…
	+ I will make special considerations to address the unique needs of AA students in my classroom by…
* A preview of the next PD session in the sequence.

**Available also are:**

Virtual office hours (James and/or Wesson)

* + On the second and fourth Wednesdays,
	+ On the second Friday afternoons from 3:00 PM to 5:00 PM.

In-person “MASTER” coaching (James)

* Teacher coaching, modeling of practices directly with students, direct student engagement
* Classroom observations and coaching by arrangement.

**Appendix A**

**PD Costs**

|  |  |  |  |
| --- | --- | --- | --- |
| **CAAASA-SDCOE Math In-Person PD**  |  |  | F |
|  |  |  |  |  |  |  |  |  |  |
|  | **Session #1**  | **Session #2** | **Session #3** | **Session #4** | **Session #5** | **Session #6** | **Session 7 FMN #1** | **Session 8 FMN #2** | ***Total*** |
| Travel, meals, and lodging (1125 X 2) | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 14800 |
| Presenters (2) fees | 4,200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 33,600 |
|  |
| Materials, printing, and shipping (incl. FGs) | 350 | 350 | 350 | 350 | 350 | 350 | 1000 | 1000 | 4100 |  |
| *Subtotal* | 6400 | 6400 | 6400 | 6400 | 6400 | 6400 | 7050 | 7050 | 52500 |  |
| Indirect costs (20% CAAASA) | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 | 1590 | 1590 | 10860 |  |
| Total cost | 7680 | 7680 | 7680 | 7680 | 7680 | 7680 | 8640 | 8640 | 63360 |  |
|  |  |  |  |  |  |  |  |  |  |  |

**Appendix B**

**Past Presentations**

*James and Wesson past keynote addresses, presentations, and workshops*

Organizations, institutions, and conferences where James and Wesson have presented keynote addresses, workshops, or seminars include, but is not limited to, the following:

* Monterey County
* Ontario-Montclair School District
* Pacific Oaks College
* Santa Cruz County Office of Education
* Solano County Office of Education
* Riverside County Office of Education

• 21st Century Community Learning Centers Multi-State Conference
• Academic Language Mastery Conference
• Alabama Governor’s Summit on Mathematics and Science Education
• Alabama Science Teachers Association (ASTA)
• Alaska Science Teachers Association (ASTA)
• American Museum of Natural History
• American Society for Biochemistry and Molecular Biology
• American Society for Investigative Pathology
• All-Africa Administrators Association
• American Community School of Abu Dhabi
• American School of Dubai
• American Society for Microbiology
• Annual Biomedical Research Conference for Minority Students

(sponsored by National of General Medical Sciences)
• Annual Conference on the Black Family
• Arizona Science Teachers Organization (ASTA)
• Arkansas Association of Education Administrators
• Arkansas Leadership Academy
• Arlene Shmaeff Memorial Education Lecture
• Art Institute of California
• Art Institute of San Francisco
• Association of African American Educators
• Association of American Schools in South America (AASSA)
• Association of California School Administrators (ASCA)
• Association of International Schools in Africa (AISA)
• Association for Science Teacher Education (ASTE)
• Baker University, School of Education
• Best of the Best Brain Conference

• Boston Public Scholls
• Brain and Learning Symposium
• Brain-Based Education Conference
• Brain Expo
• California Alliance Concerned with School Age Parenting and Pregnancy
• California Association of Bilingual Educators (CABE)

• California Association of Black School Educators (CABSE)
• California Community Colleges Association (CCCA)
• California Association for Counseling and Development
• California Child Development Administrators Association
• California Community College Counseling Association
• California County Superintendents Educational Services Association
• California Kindergarten Association
• California Mathematics Science Project
• California Mathematics and Science Partnership
• California Mathematics Council
• California Mathematics and Science Partnership
• California Science Education Conference
• California Science Teachers Association
• California Science Center
• California School Counselors Association
• California State University, Dominguez Hills, Science Teaching and

Learning for Diverse Learners

• California STEM Forum
• California STEM Symposium

• California Superintendents Symposium
• Carnegie Science Institute (Washington, DC)
• Center for the Education and Study of Diverse Populations (CESDP)
• Central and Eastern European Schools Association (CEESA)
• Chabot Space and Science Center

• Chicago Public Schools
• Coalition of California Black School Board Members
• College of Southern Idaho
• Colorado Association of Science Teachers (CAST)
• Colorado Charter Schools Association
• Colorado Council of the International Reading Association
• Colorado Science Conference for Professional Development
• Community College League of California Trustees
• Conference for Research-Based Process Education
• Conference for the Advancement of Science Teaching
• Contra Costa County Family and Children Services

• Dallas ISD
• Del Norte Childcare Council
• Dekalb County Science Educators
• Design and Technology Association (DATA) - England

• Detroit Public Schools
• Dinner with a Scientist
• Distinguished Educators Series
• Distinguished Scientist Lecture Series
• Diversity in Teaching and Learning in American Higher Education

• Early Childhood Education Leadership Institute
• Early Childhood Education STEM Conference
• Early Childhood Mathematics and Science Institute
• East Asia Regional Council of Overseas Schools (EARCOS)
• Elizabethtown College
• Florida Council of Independent Schools
• Genesee County Superintendents and Administrators
• Georgia Perimeter Colleges
• Georgia Science Teachers Association (GSTA)
• Georgia STEM Forum
• Glennville State University
• Great Teachers Seminar
• Hampton University
• Hampton University School of Pharmacy
• Hawaii Counselors Association
• Hawaiian Association for Counselors and Educators in Government
• Hawaii Association of Science Teachers (HaSTA)
• Hawaiian Association for Supervision and Curriculum Development (HASCD)
• Head Start Association
• Hoosier Association of Science Teachers, Inc. (HASTI)

• Houston ISD

• Early Childhood Education
• IBM Corporation
• Idaho State University
• Idaho STEM
• Informal Science Education Association of Texas (ISEAT)
• Integrated Learning Institute
• Institute for Engineering, Design and Technology Association (IEDTA)
• International Brain Education Association (IBrEA)
• International Conference on Design and Technology Educational

Research and Curriculum Development
• International Symposium on Electronic Art

• Jefferson County Public Schools

• Jefferson Parish Public Schools

• Johnson & Johnson Corporation
• K-12 Alliance/WestEd
• Kansas Association of Teachers of Science (KAST)

• Kansas City Board of Education
• Kauffman Foundation of Kansas City
• Kentucky Science Teachers Association (KSTA)
• Korea Institute of Brain Science (KIBS)
• LAUSD Elementary Science Symposium
• Learning and the Brain
• Learning Brain Expo Winter Conference
• Learning Links Conference
• Los Alamos National Laboratory Foundation (LANL)

• Los Angeles County Office of Education

• Los Angeles Unified School District
• Los Angeles Mathematics, Science and Technology Institute
• Los Angeles Systemic Initiative for Mathematics and Science
• Los Angeles Systemic Initiative’s Parents Institute
• Los Rios Community College District
• Louisiana Science Teachers Association (LSTA)
• Maine Mathematics and Science Alliance
• Maine Science and Literacy Conference
• Maricopa Community College District
• Martin University
• Maryland Association of Elementary School Principals (MAESP)
• Maryland Association of Science Teachers (MAST)

• Mesa Public Schools
• Metropolitan Association of College and University Biologists
• Michigan Association of School Boards (MASB)
• Middle East North Africa International STEM conference
• Midwest Brain and Learning Institute
• Mills College
• Mississippi Science Teachers Association (MSTA)
• Models School Conference
• Montalvo Arts Center

• Montgomery County  Public Schools
• Museum of African American History
• NASA SEMAA (Science, Engineering, Mathematics, and Aerospace

Academies) Directors
• National Academies Summer Institute on Undergraduate Education in

Biology
• National Alliance of Business
• National Association of Independent Schools (NAIS)
• National Catholic Educators Association (NCEA)
• National Council of Teachers of Mathematics (NCTM)

• National Registry Summit
• National Science Foundation’s Systemic Initiatives for • Mathematics and

Science (NSF)
• National Science Research Council (NSRC)
• National Science Teachers Association (NSTA)
• National Symposium for Scientists and Engineers
• Near East South Asia Schools (NESA)
• Nevada MEGA
• Nevada State Science Teachers Association (NSSTA)
• New Hampshire Afterschool Programs
• New Mexico Science Teachers Association (NMSTA)
• New Mexico State University, College of Education
• New Mexico STEM Conference
• New York City English Language Learners

• New York City Department of Education
• Next Generation Science Standards Summit
• North Carolina K-12 STEM Conference
• North Carolina Science Teachers Association (NCSTA)
• North Dakota School Boards Association
• North Dakota Science Teachers Association (NDSTA)
• North Dakota STEM Summit
• North Idaho College
• Northern California Early Learning Summit
• Northern California Nursing Association
• Northern New Mexico Inquiry Science Education Consortium
• NSTA STEM Forum and Expo

• Oakland Public Schools
• Oklahoma Association of Community Colleges
• Oregon Science Leadership Academy
• Oregon Science Teachers Association (OSTA)
• Pacific Institute
• Perris Union HS District

• Pennsylvania ASSET program
• Pennsylvania Science Teachers Association (PSTA)
• Pioneer RESA Summer Leadership Conference
• Phoenix Leadership Conference
• Presidential Awards for Excellence in Mathematics and Science Teaching

(PAEMST)

• RC 2000
• Rocky Mountain Science Institute

• San Antonio ISD
• San Diego Summer Science Institute

• San Mateo Union High School District
• Science Education Administrators and Policymakers Institute
• Science Education Council of Ohio (SECO)
• Science Leadership
• Science Teachers Association Of New York State (STANYS)
• Science Teachers Association of Texas (STAT)
• Society of Elementary Presidential Awardees (SEPA)
• South Carolina Alliance of Black School Educators
• South Carolina Coalition for Mathematics and Science

• Stanford University
• STEM Education Excellence for the 21st Century
• STEM Learning in Action
• STEM Learning Summit
• STEM Leadership Academy
• STEM Leadership Institute (Washington, DC)
• Summer Institute for the National Academy of Sciences
• Tennessee Science Teachers Association
• Tennessee STEM
• Texas Regional Collaborative for Science and Mathematics

• United Nations Department of Public Information and NGOs

• University of California of Los Angeles
• University of Richmond

• University of Texas Austin
• Utah Science Teachers Association
• Utah Science Teachers Association
• Virginia Association of Science Teachers
• Virginia Science Leadership Learning Association
• Virginia STEM Conference
• Washington, DC STEM Conference
• West Virginia Science Teachers Association
• West Virginia STEM

• Winston-Salem/Forsyth County Schools
• Wisconsin STEM Conference
• Wyoming Math and Science Teachers Conference