The Math Anxiety webinar will begin momentarily.

Overcoming Math Anxiety

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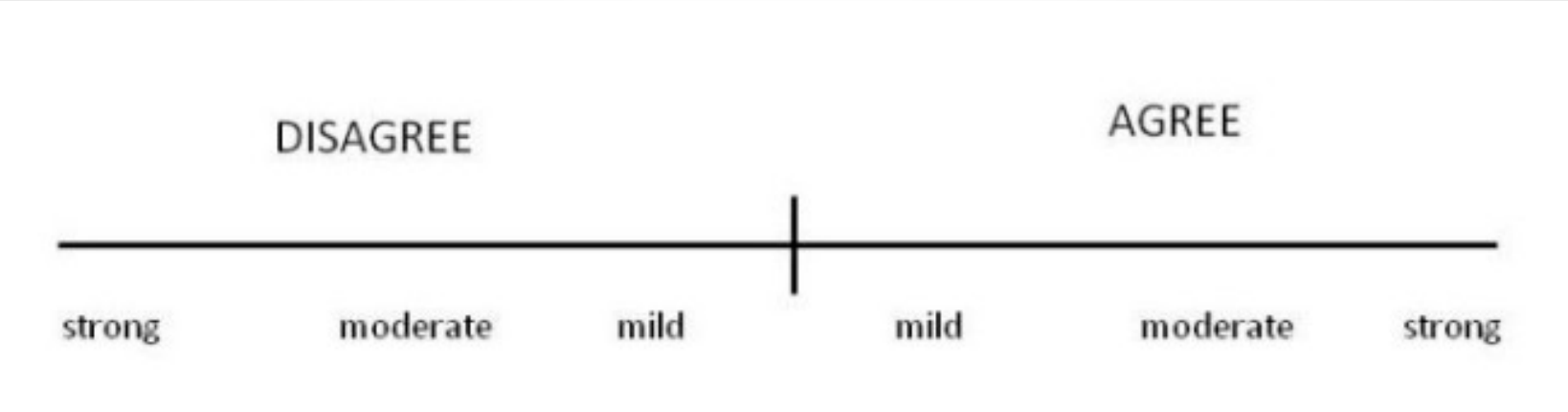
Am I math anxious?

“Perhaps teachers who are aware of their own negative attitudes and their sources of mathematics anxiety seek ways to provide students with a different mathematics environment, and unaware teachers simply perpetuate mathematics anxiety.”

Source: Geist, E. (2011). The anti-anxiety curriculum: Combating math anxiety in the classroom. *Journal of Curriculum and Instruction 5*(2), 27-44.

Self Reflection

Think of yourself as a learner, first.

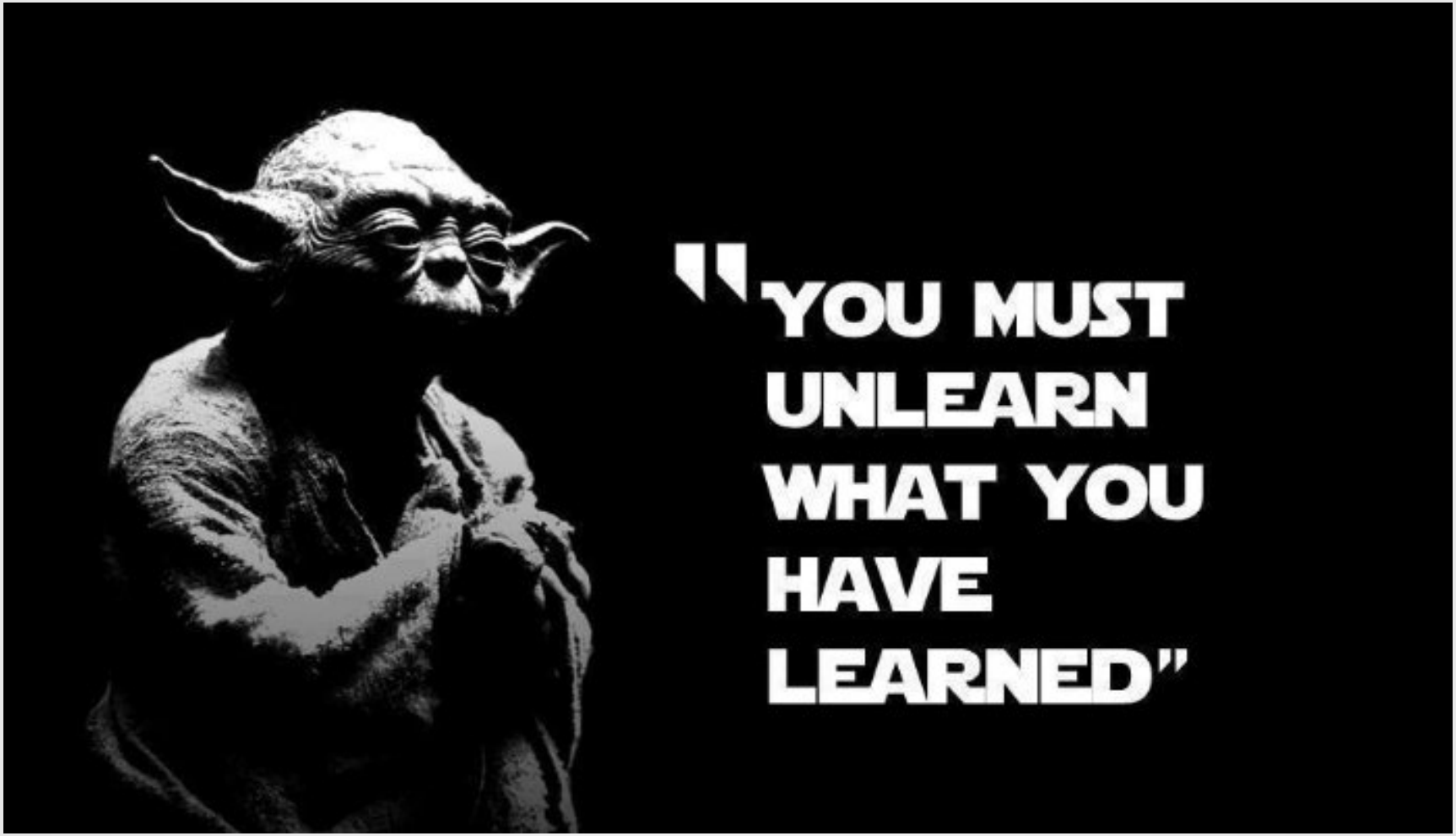


As I read a series of prompts, think about where you fall on this scale. Be honest with yourself.

Self Reflection

- I have been told I am not good at math
- One or both of my parents is not a math person
- When it's time for a math test, I feel overcome with panic
- I prefer to work on math alone than in groups of my peers
- I tend to zone out when the topic of discussion is math
- Math problems that don't have one right answer are stressful
- I feel uneasy when asked to explain my solution to a math problem
- When asked to do a math problem, I sometimes draw a blank
- It stresses me out to not know the answer to a math problem
- I am uncomfortable asking for help on math problems
- I regularly avoid situations in which I have to use math
- Boys are wired to be better at math than girls
- Some people are innately better at math than others
- I contribute less in groups when the topic is math
- Math is stressful
- I have experienced math anxiety as a student
- I have experienced math anxiety in my professional life
- I am not a math person

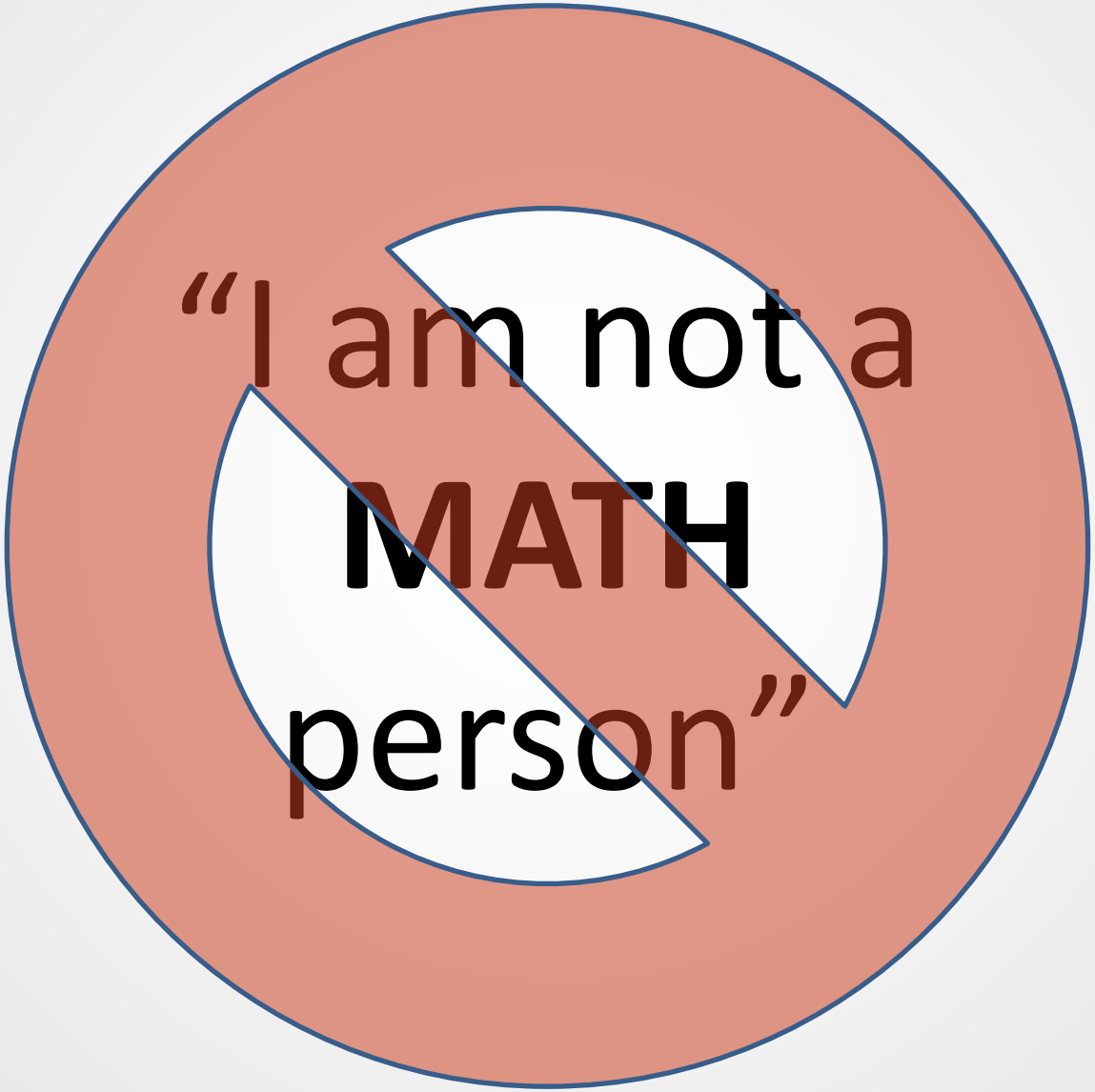
Math Anxiety is Learned



“Anecdotally, most of us can recall a time when we overheard a friend, colleague, or family member talk about his dislike for math or how she is ‘not a numbers person.’ This is a notable contrast to reading; few people cheerfully volunteer that they just aren’t very good readers. It seems socially acceptable to be anxious about math.”

Source: https://hpl.uchicago.edu/sites/hpl.uchicago.edu/files/uploads/American%20Educator,%202014.pdf

Shifting Your Thinking



"…math anxiety can become a generational problem, with adults [who are] uncomfortable with math passing negative feelings on to their children or students."

Source: http://www.washingtonpost.com/national/researchers-say-math-anxiety-starts-young/2011/05/16/AG3YqxEH_story_1.html

What is Math Anxiety?

Definition

Math Anxiety

[math ang-**zahy**-i-tee]

noun

1. A feeling of intense frustration or helplessness about one's ability to do math which can subsequently interfere with performance
2. An extreme emotional and/or physical reaction to a very negative attitude toward math

What causes math anxiety?

- Bad math experiences
- Math-phobic parents and/or teachers
- Fear of embarrassment
- High expectations of self
- Underdeveloped basic math skills
- Timed tests

“Three practices that are a regular part of the traditional mathematics classroom and cause great anxiety in many students are imposed authority, public exposure and time deadlines.”

Source: http://www.mathgoodies.com/articles/math_anxiety.html

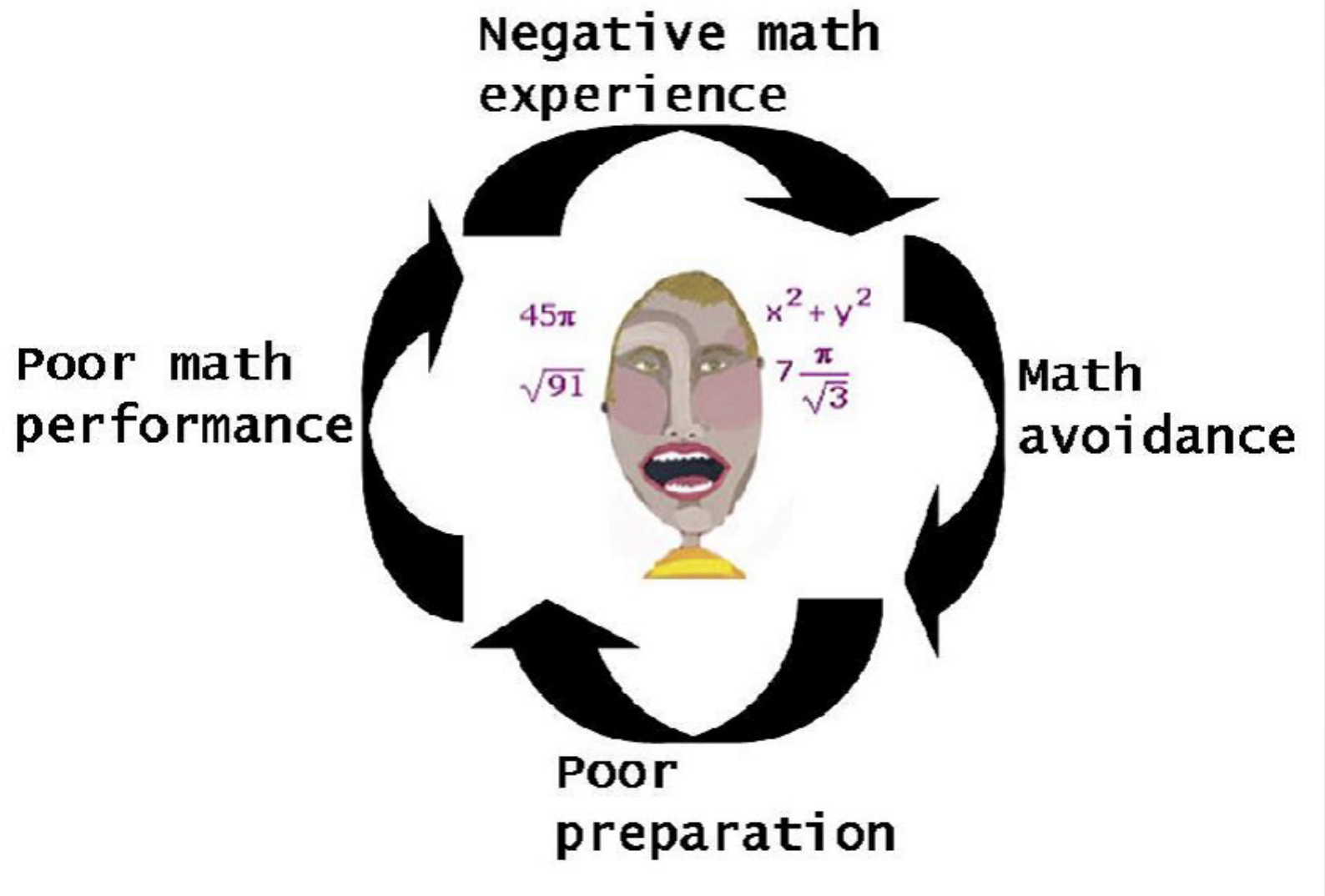
Symptoms of math anxiety

- Panic
- Paranoia
- Passive Behavior
- Avoidance
- Lack of confidence
- Nerves
- Nausea
- Hopelessness
- Mind going “blank”

“Using brain scans, scholars determined that the brain areas active when highly math-anxious people prepare to do math overlap with the same brain areas that register the threat of bodily harm—and in some cases, physical pain.”

Source: http://news.uchicago.edu/article/2012/10/31/when-people-worry-about-math-brain-feels-pain

The cycle of math anxiety



Consequences of Math Anxiety

Limited career options

- According to data from the General Accountability Office, the number of students in the United States pursuing STEM-degrees declined from 32% during the 1994-1995 academic year to 27% in the 2003-04 academic year. This avoidance of mathematical skill also limits the country's employee resources in science and technology.

Financial Implications

- Math anxiety might affect people's choices of investment options. Additionally, reports have indicated that 58% of American adults do not have the knowledge to calculate a tip for their waiter when out to eat, 71% cannot calculate miles per gallon, and 78% do not know how to calculate the interest paid on a loan.

Inability to accurately decipher statistics

- People with math anxiety were less likely to understand statistics about the apparent risks of genetically modified food, for instance; by the same token, it’s easy to see how it could lead to a serious misunderstanding of real dangers like smoking or over-eating.

Suboptimal everyday decisions

- Linked to quick decisions, low confidence, and a tendency to rely on gut feelings rather than careful consideration.

How does math anxiety influence my students?

"Studies have consistently shown that elementary education majors have one of the highest levels of mathematics anxiety on college campuses."

Source: Geist, E. (2011). The anti-anxiety curriculum: Combating math anxiety in the classroom. *Journal of Curriculum and Instruction 5*(2), 27-44.

How it manifests

Math anxious teachers often:

- Spend more class time devoted to whole class instruction
- Field fewer student questions during lessons
- Focus on procedural thinking and algorithms
- Use more commercially prepared worksheets
- Focus on the correct solution, not the path
- Publicly celebrate high performers
- Avoid hands on experiences and manipulatives
- Spend less time in the school day on math instruction

Reducing student anxiety

"[Studies] highlight a need for more training for parents and teachers on how to conquer their own math fears and avoid passing them to children…"

Source: http://www.washingtonpost.com/national/researchers-say-math-anxiety-starts-young/2011/05/16/AG3YqxEH_story_1.html

Practices that Reduce Math Anxiety

- Provide students with confidence-building exercises that enable all students to succeed
- Celebrate creative approaches to problems – regardless of the solution
- Normalize mistakes and errors as learning opportunities
- Utilize real world connections to make the math relevant and meaningful
- Emphasize the importance of perseverance
- Use scaffolding questions to keep students out of their alarm zone
- Provide opportunities for meaningful collaboration with peers
- Incorporate hands on activities and manipulatives to build conceptual understanding
- Vary assessment methods and include authentic assessments

Language Matters

What you're saying	What students might hear
This is easy, it shouldn't take long	If it took me a long time, I must not be smart enough
This will be on the test	The only reason to learn this is for the test
You're smart, you can handle it	If I'm struggling, then I'm letting you down
You should have learned this last year	If I don't remember this, I will not be successful moving forward
I'm not good at math either	It's okay that I'm not good at math

Empathize!

Recognize that your students' feelings toward mathematics are real. Empathize with them and teach them strategies to navigate their anxiety.

Be patient, caring, and understanding.

"Teachers with positive attitudes toward math were found to encourage student initiative and independence. They modeled persistent behaviors and presented active demonstrations."

Source: Geist, E. (2011). The anti-anxiety curriculum: Combating math anxiety in the classroom. *Journal of Curriculum and Instruction 5*(2), 27-44.

Q&A

For questions after the webinar, please email Monisha.Karnani@dc.gov

Professional Development Opportunities

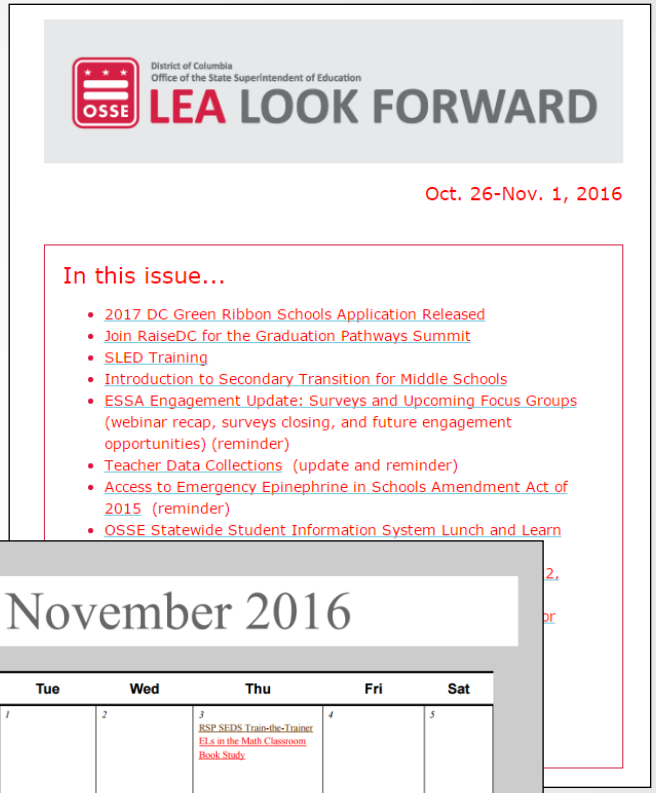
The OSSE Teaching and Learning Team offers a wide variety of professional development opportunities.

Ways to stay informed:

1. LEA Look Forward Weekly Newsletter
   osse.dc.gov/newsroom/newsletters

2. Teaching and Learning PD Calendar
   osse.dc.gov/publication/2016-17-school-year-k-12-program-calendar

3. OSSE Events Calendar
   osse.dc.gov/events



District of Columbia
Office of the State Superintendent of Education
LEA LOOK FORWARD

Oct. 26-Nov. 1, 2016

In this issue...

- 2017 DC Green Ribbon Schools Application Released
- Join RaiseDC for the Graduation Pathways Summit
- SLED Training
- Introduction to Secondary Transition for Middle Schools
- ESSA Engagement Update: Surveys and Upcoming Focus Groups (webinar recap, surveys closing, and future engagement opportunities) (reminder)
- Teacher Data Collections (update and reminder)
- Access to Emergency Epinephrine in Schools Amendment Act of 2015 (reminder)
- OSSE Statewide Student Information System Lunch and Learn

EDUCATION

November 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3 RSP SEDS Train-the-Trainer ELs in the Math Classroom Book Study	4	5
6	7 DC STEM Summit "STEM in the City"	8	9	10	11 Holiday	12
13	14 ACCESS Test Prep	15 ACCESS Test Prep SY 2016-17 School Based Medicaid Re-imbursement Training	16 LEA Sped POC Monthly Webinar	17 ELs in the Math Classroom Book Study	18	19
20	21	22	23	24 Holiday	25	26
27	28	29 LEA Institute: It Takes a City	30 Nonpublic SEDS POC Webinar			

Please submit any additional questions to
OSSE via the OSSE Support Tool or to OSSE.tta@dc.gov

Thank you!