

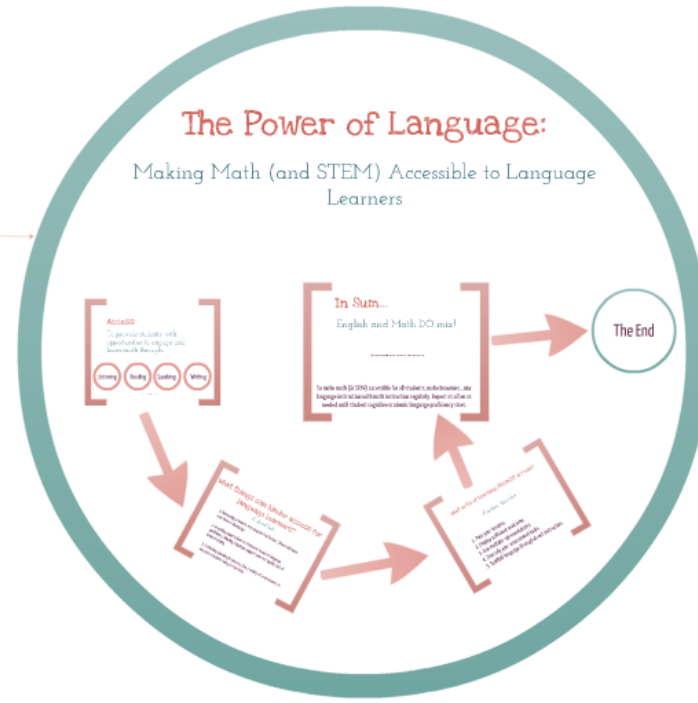
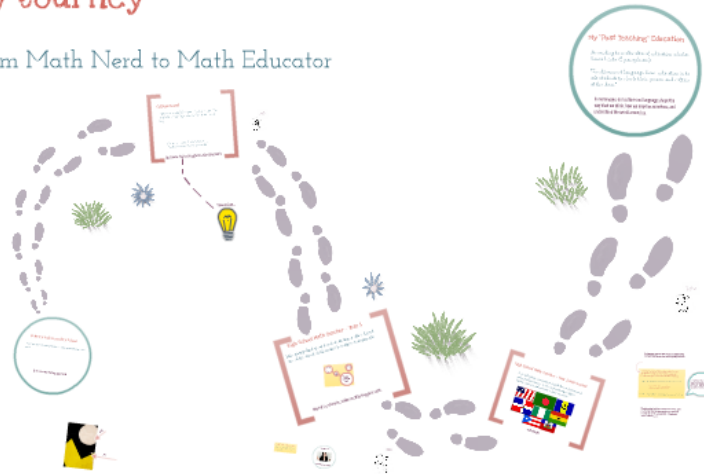
From "oil and water" to brownies:

Mixing MATH & ENGLISH to promote achievement for English Learners

Dr. Yehuda Zemanu

My Journey

From Math Nerd to Math Educator



From "oil and water" to brownies:



Yum

Mixing MATH & ENGLISH to
promote achievement for
English Learners

Dr. Yetunde Zannou

My Journey

From Math Nerd to Math Educator





Primary and Secondary School

I was an ace in mathematics. I ate mathematics for lunch.



Math



Me

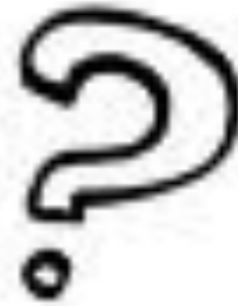


I just understood the language of math.



College-bound

I majored in math because I loved it...until the Math Writing class, which threw me for a loop.





Well that's not right.

Math and English don't mix.

Turns out I didn't LOVE-LOVE it.
(translation: I can do it, but I've seen enough)

I just never had to struggle to understand

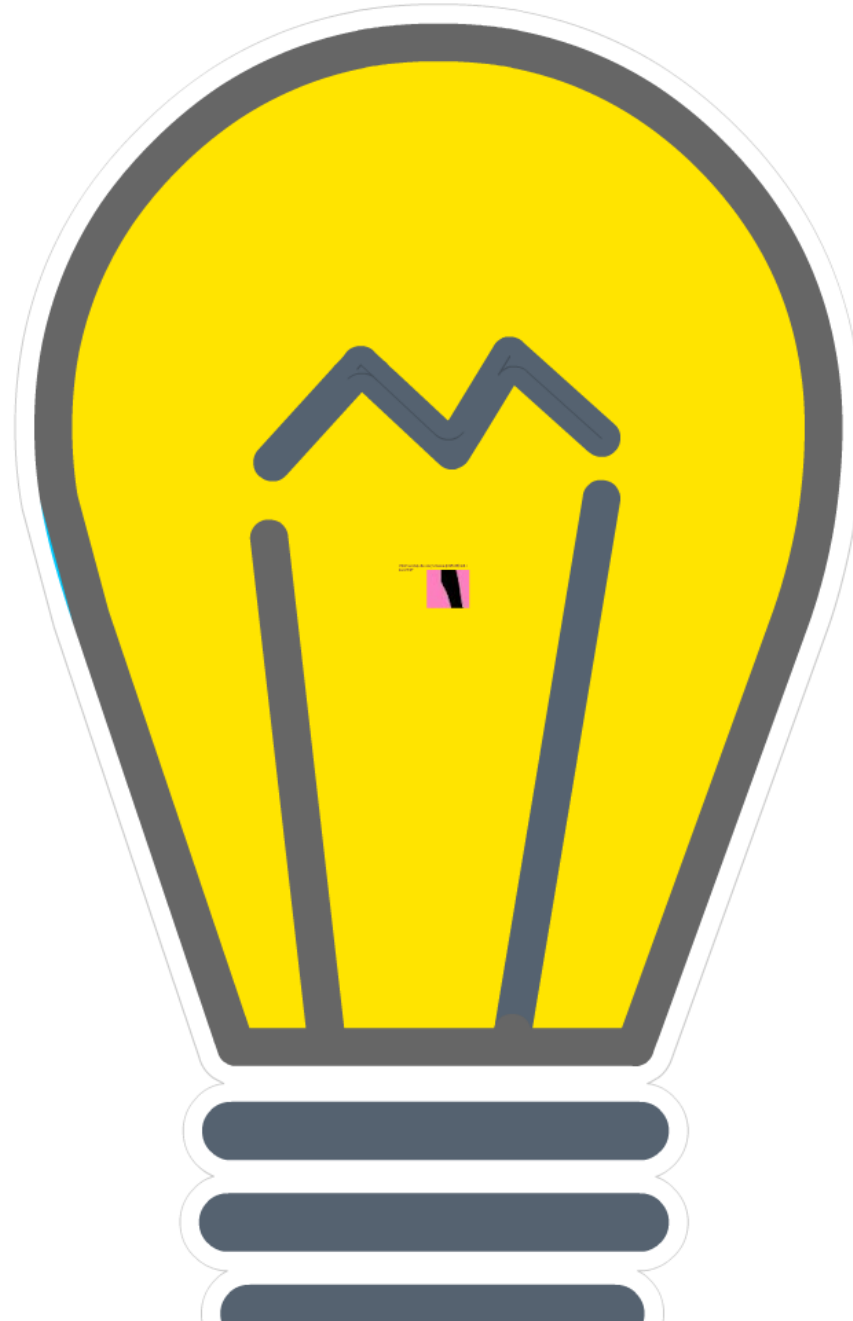
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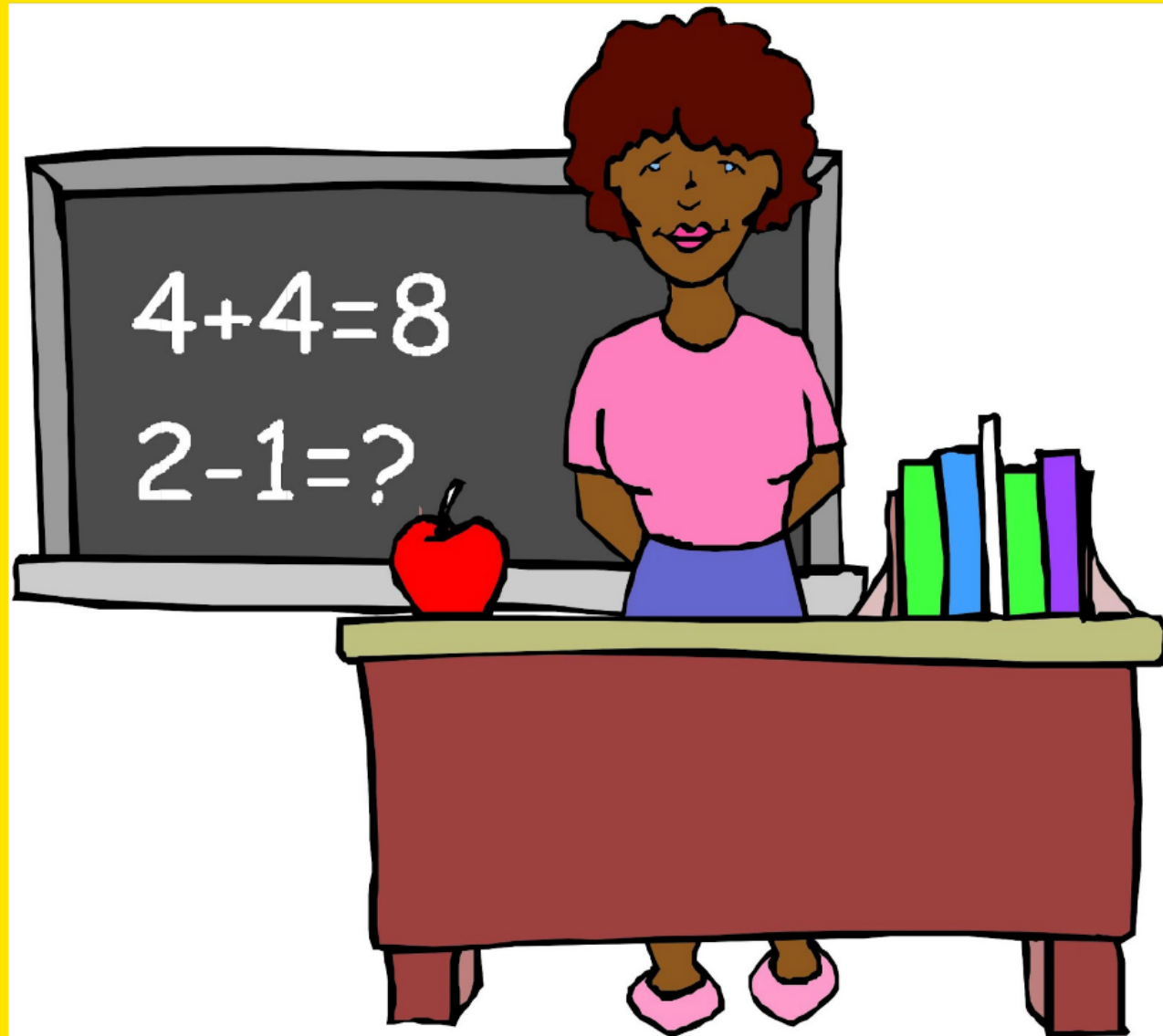
I just never had to struggle to understand math.



I had an idea...

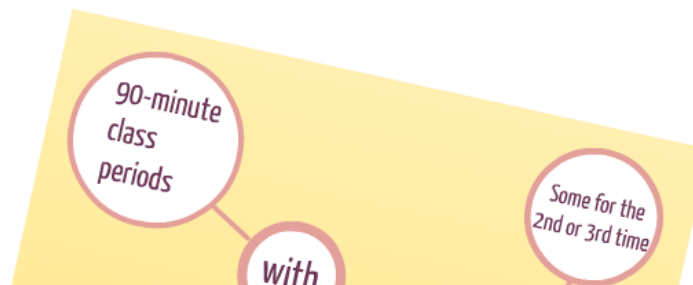


What if I could help others love (not necessarily LOVE-LOVE) math. I should TEACH!



High School Math Teacher - Year 1

Like many first year teachers in inner cities, I had one of the most challenging teaching assignments

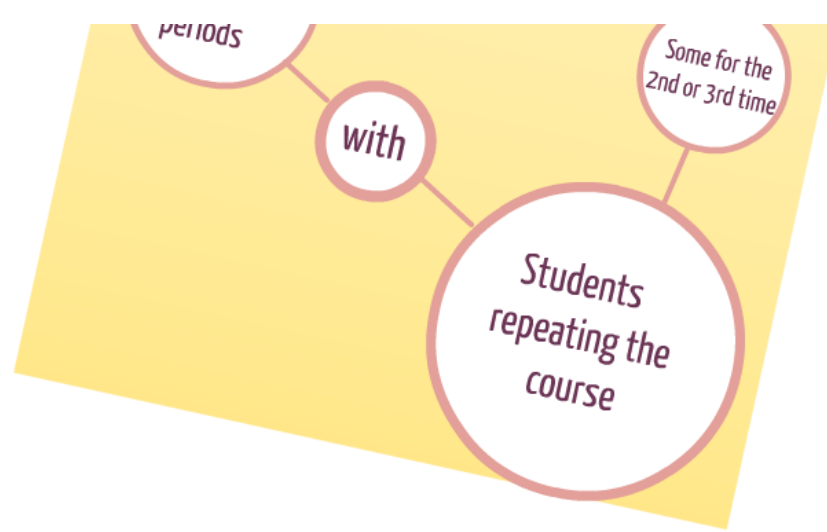


90-minute
class
periods

with

Some for the
2nd or 3rd time

Students
repeating the
course



Most of my students, unlike me, DID struggle in math.



Meanwhile in the Teacher's Lounge...

A frustrated colleague lamented their newly assigned English-as-a-Second Language class.

"They don't listen."



"They only want to speak Spanish!"



oo



Good thing all my
kids speak English.

High School Math Teacher - Year 2 and Beyond

My old school eventually closed due to persistently poor performance. I went to a nursing magnet school where students came from all over.

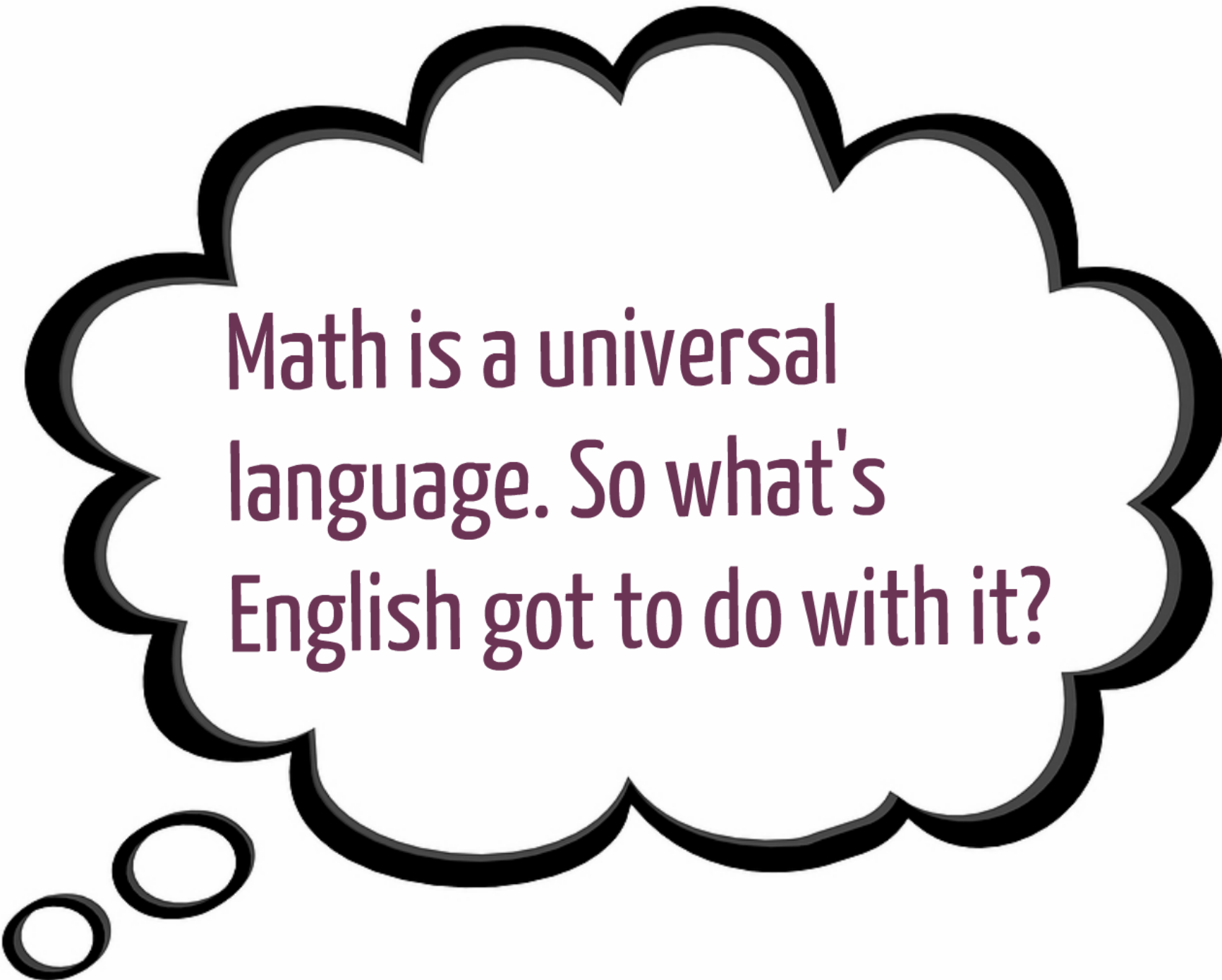


And I thought...

And I thought...

Good thing all my
kids speak English.

But that wasn't exactly true. Some students were learning English, but it wasn't always obvious. Even if they were, I thought to myself...



Math is a universal
language. So what's
English got to do with it?

I eventually learned in graduate school (after leaving the classroom to pursue research),
Students acquire a second language in parts:

Basic Interpersonal Communication Skills (BICS)

*which develop more quickly
than and apart from their*

Cognitive Academic Language Proficiency (CALP)

de Jong & Harper (2005) say:
Strong communication in the native language supports academic language proficiency in the target language. It's okay for students to "talk math" in the language they're comfortable while they learn English.

Basically, speaking English with seeming fluency does not signify understanding or academic language proficiency. Conversely, understanding does not require an ability to speak English fluently (Cummins, 1979).


My "Post Teaching" Education

According to multicultural education scholar Sonia Nieto (I paraphrase):

"To disconnect language from education is to ask students to check their person and culture at the door."

In many ways, our culture and language shape the way that we think, how we express ourselves, and understand the world around us.

Some of you might be thinking

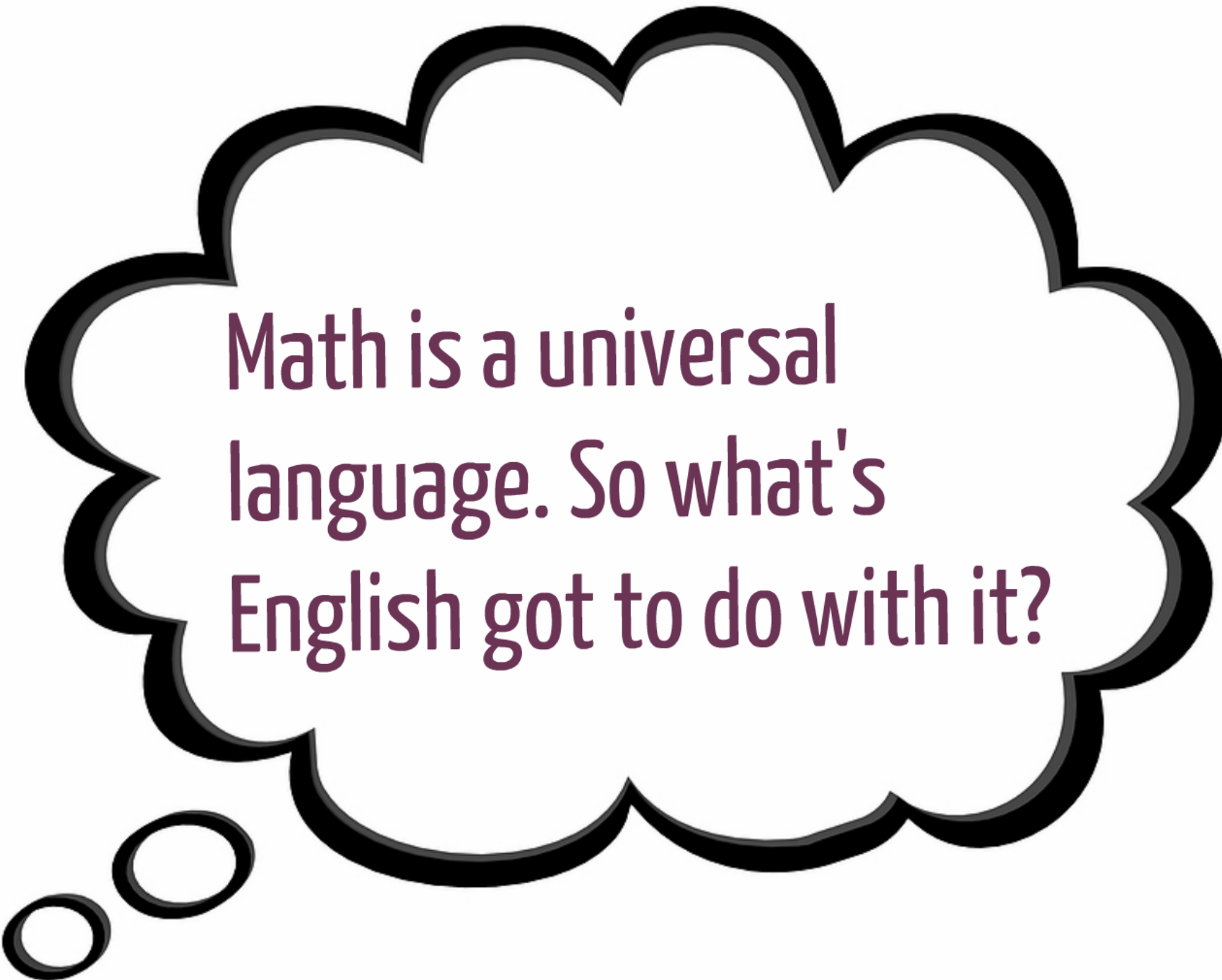


Well what's this
got to do with math?

Well what's this
got to do with math?

Math is a universal language. So what's English got to do with it?





Math is a universal
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English got to do with it?



The Power of Language:

Making Math (and STEM) Accessible to Language Learners



u might be thinking

The Power of Language:

Making Math (and STEM) Accessible to Language Learners



Access:

To provide students with opportunities to engage and learn math through...

Listening

Reading

Speaking

Writing

Yes, even WRITING math. (I'm a believer!)

Yes, even **WRITING** math. I'm a believer!

What things can hinder access for language learners?

A short list...

1. Rewarding students who respond the fastest. Others will learn over time to disengage.
2. Lowering expectations or standards based on language proficiency. Needing language support does not signify lack of understanding.
3. Evaluating learning in one way. Use a variety of assessments to see what students bring to the table.

what acts of teaching PROMOTE access?

Another short list...

1. Pace your lessons.
2. Employ sufficient wait time.
3. Use multiple representations.
4. Diversify your assessment tools.
5. Scaffold language through direct instruction.



In SUM...

English and M

In Sum...

English and Math DO mix!

Math may be a universal language, but it is mediated by the language of instruction.

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Math may be a universal language, but it is mediated by the language of instruction.

To make math (& STEM) accessible for all students, make brownies...mix language instruction with math instruction regularly. Repeat as often as needed until student cognitive academic language proficiency rises.





The End