



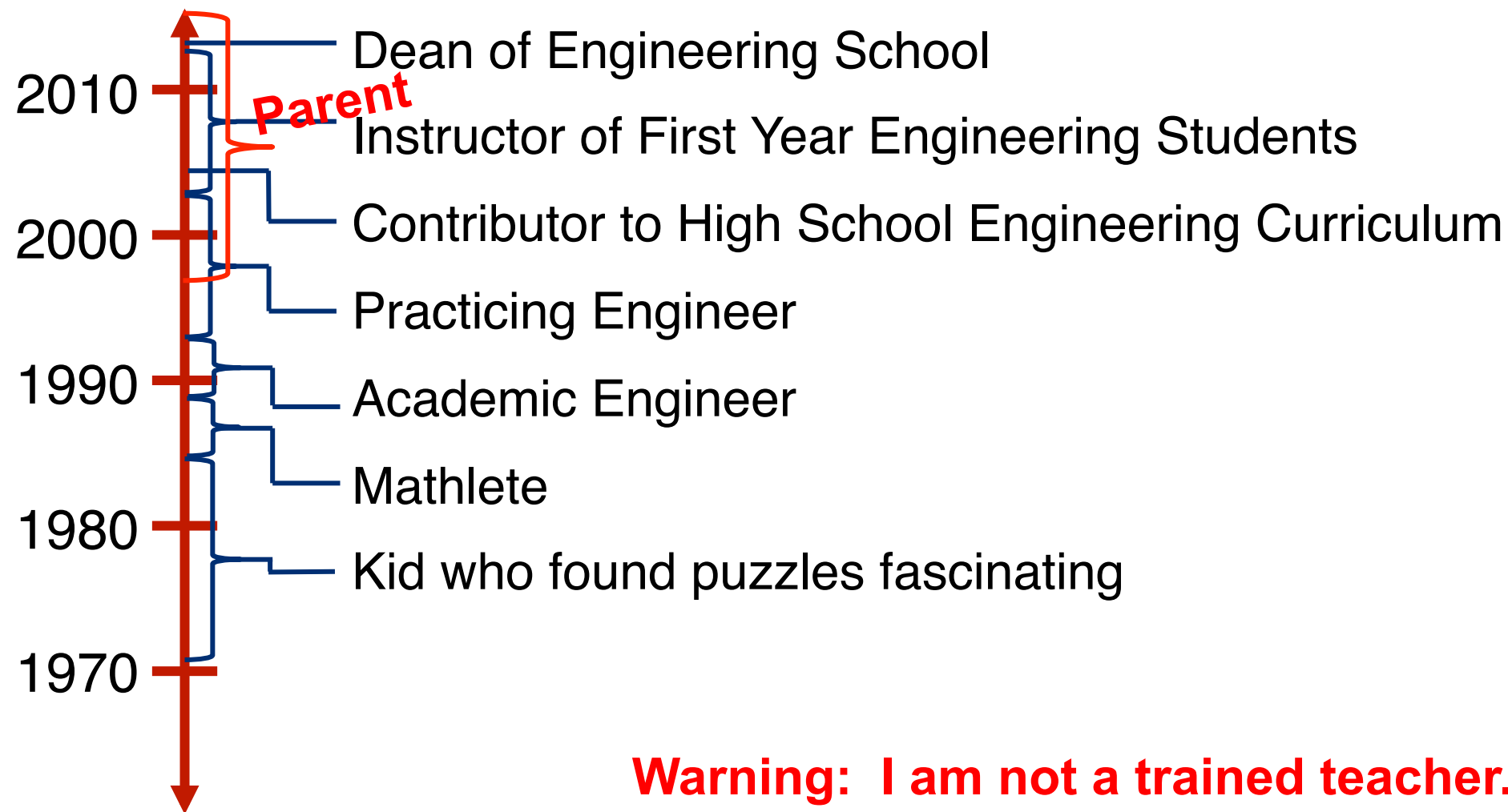
# Understanding the New Texas Essential Knowledge and Skills in Mathematics Research to Practice

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# My Perspective



# My Favorite Math Problem,

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came from my daughter's Talented and Gifted Teacher:

*Tonight for homework, find as many ways as you can think of to try to solve the following problem:*

*[Insert word problem here]*

# What I see in first year engineering students:

- They think about mathematics procedurally.
  - They have gotten good at following recipes, but never learned how to cook.
- They don't link math to the world or even models of behavior.
  - Sines and Cosines as functions.
- Certain important parts of math are completely forgotten:
  - Logarithms
- They have memorized, but not understood.
  - Can't "check" equations for themselves to make sure they've remembered correctly.

# Word Problems: the Bane of Math Students!

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- Why is that?

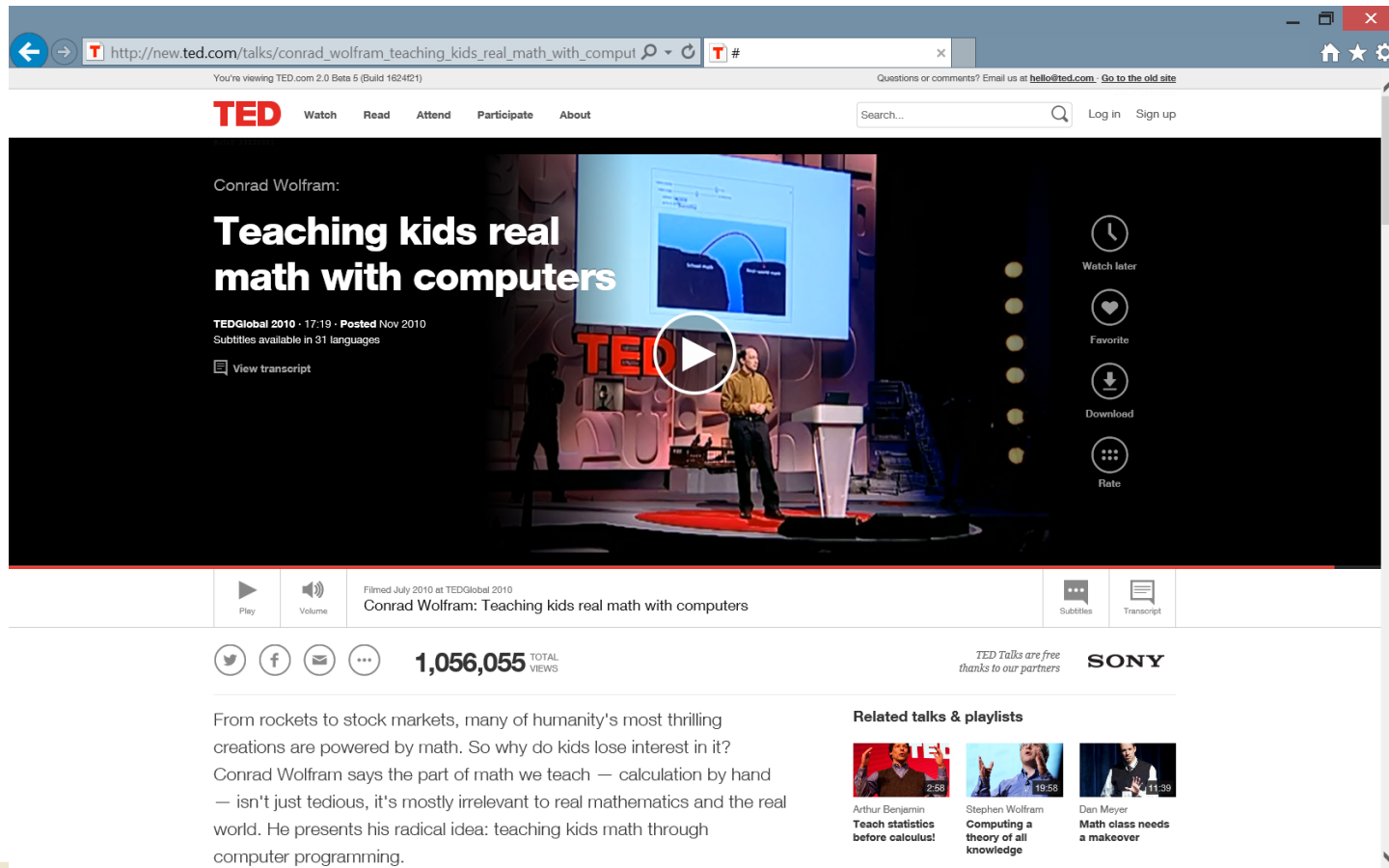
# Another Favorite Math Problem



- This one comes from Math Mama's Blog:  
<http://mathmamawrites.blogspot.com/2010/04/murder-mystery-project-for-logarithms.html>
- A murder mystery full of logarithms.

# A Homework Assignment: (if you haven't already done so)

- Go watch Conrad Wolfram's TED talk.



The screenshot shows a web browser window displaying the TED website. The address bar shows the URL: [http://new.ted.com/talks/conrad\\_wolfram\\_teaching\\_kids\\_real\\_math\\_with\\_comput](http://new.ted.com/talks/conrad_wolfram_teaching_kids_real_math_with_comput). The page features a large video player for the talk "Teaching kids real math with computers" by Conrad Wolfram. The video player includes a play button, volume control, and a progress bar. Below the video player, there are social media sharing icons (Twitter, Facebook, Email, Print) and a view count of 1,056,055. To the right of the video player, there are options to "Watch later", "Favorite", "Download", and "Rate". Below the video player, there is a section for "Related talks & playlists" with three recommended talks: "Teach statistics before calculus!" by Arthur Benjamin, "Computing a theory of all knowledge" by Stephen Wolfram, and "Math class needs a makeover" by Dan Meyer. The TED logo and navigation menu are visible at the top of the page.

Conrad Wolfram:  
**Teaching kids real math with computers**

TEDGlobal 2010 · 17:19 · Posted Nov 2010  
Subtitles available in 31 languages  
[View transcript](#)

1,056,055 TOTAL VIEWS

From rockets to stock markets, many of humanity's most thrilling creations are powered by math. So why do kids lose interest in it? Conrad Wolfram says the part of math we teach — calculation by hand — isn't just tedious, it's mostly irrelevant to real mathematics and the real world. He presents his radical idea: teaching kids math through computer programming.

**Related talks & playlists**

- Arthur Benjamin: Teach statistics before calculus! (2:58)
- Stephen Wolfram: Computing a theory of all knowledge (19:58)
- Dan Meyer: Math class needs a makeover (11:39)

# The Highlights:

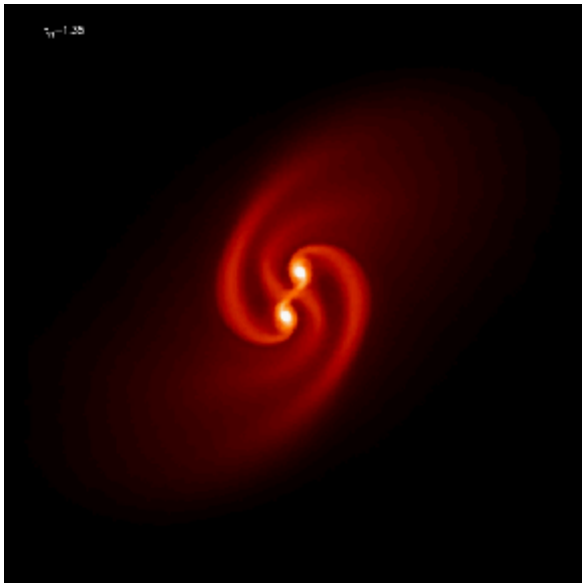
- “Stop Teaching Calculating, Start Teaching Math”
- Math is:
  - Posing the right question.
  - Mapping the real world to a formulation.
  - Computation. 80% of our time spent here, and doing it by hand!
  - Verifying the Math formulation in the Real World.

*Flipping this would prepare everyone to use math in their lives, whether comparing mortgage approaches or designing the next Iphone.*



# Mathematics & Science for the Real World

- Math and Science are toolboxes which allow you to solve real world problems.
- How to we assess thoughtful problem solving rather than the mechanics of computation?



- We can expose students to beautiful concepts while abstracting away the complexity for which they are not yet prepared.