Transforming STEM Learning for All Students

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NSF Grant Support (2002-2015):  
1503439, 1503510, 1226321, 1020362, 0817582, 0442841, 0123561
STATES OF MATTER
Before dinner I yelled at my 9 year old for getting on the computer w/o asking. I took great umbrage that he would play around while I was working to fix his food. Well, we finished dinner and I sent him outside to play while I checked to see what “trouble” he really got into while he was on my computer, unsupervised.

This is what I found him playing around with. http://phet.colorado.edu/en/simulation/states-of-matter

Is there a hashtag for this? Maybe #dumbfounded ? IDK.
He’s still in trouble though ;)

#dumbfounded
ENGAGEMENT
BUILD AN ATOM
ENGAGEMENT → LEARNING
IMPLICIT SCAFFOLDING
BUILD AN ATOM
131 Simulations
Physics, Chemistry, Math, Biology, Earth Science
3rd grade to college
1200+ Sim-based lessons
All FREE open educational resources
FOR MILLIONS OF LEARNERS...
IN SCHOOL

8:00 AM  12:00 PM  4:00 PM
Minority and low-income populations

Of teachers surveyed:
40% of their classrooms serve
>50% minority/low-SES students
WITH DIVERSE STUDENTS

With under-achieving students
- 66% of teachers

With average-achieving students
- 91% of teachers

With high-achieving students
- 87% of teachers
Deaf students
PHET SIMULATIONS ➔
INCLUSIVE PHET SIMULATIONS

NSF GRANT #1503439, 2015-2017: Ramping Up Accessibility in STEM: Inclusively Designed Simulations for Diverse Learners
INCLUSIVE PHET SIMULATIONS

Enable **ALL** students to **EXPERIENCE** science

Mobility, sensory, or learning disabilities

In integrated classrooms
INCLUSIVE FEATURES

Alternative Navigation
Verbal descriptions and feedback
Sound and Music (Sonification)
Simulations are not webpages
Few standards in these environments
Generalizable and customizable
DESIGN CHALLENGES

Pedagogically useful, intuitive accessibility features
Layers must all "play well together"
LOOKING FORWARD

Enable **ALL** students to **EXPERIENCE** science

Suite of research-based, free, and accessible sims
With inclusive design features
That benefit students with disabilities, and more
In integrated classrooms, and beyond
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