



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

TEACHING AND LEARNING  
ENHANCEMENT FUND

# How will Our Children Learn Science in 2050?

**Dr. Marina Milner-Bolotin**

The University of British Columbia, Vancouver, Canada

*Vancouver Nerd Nite 2015*

# 21<sup>st</sup> Century Career Paths

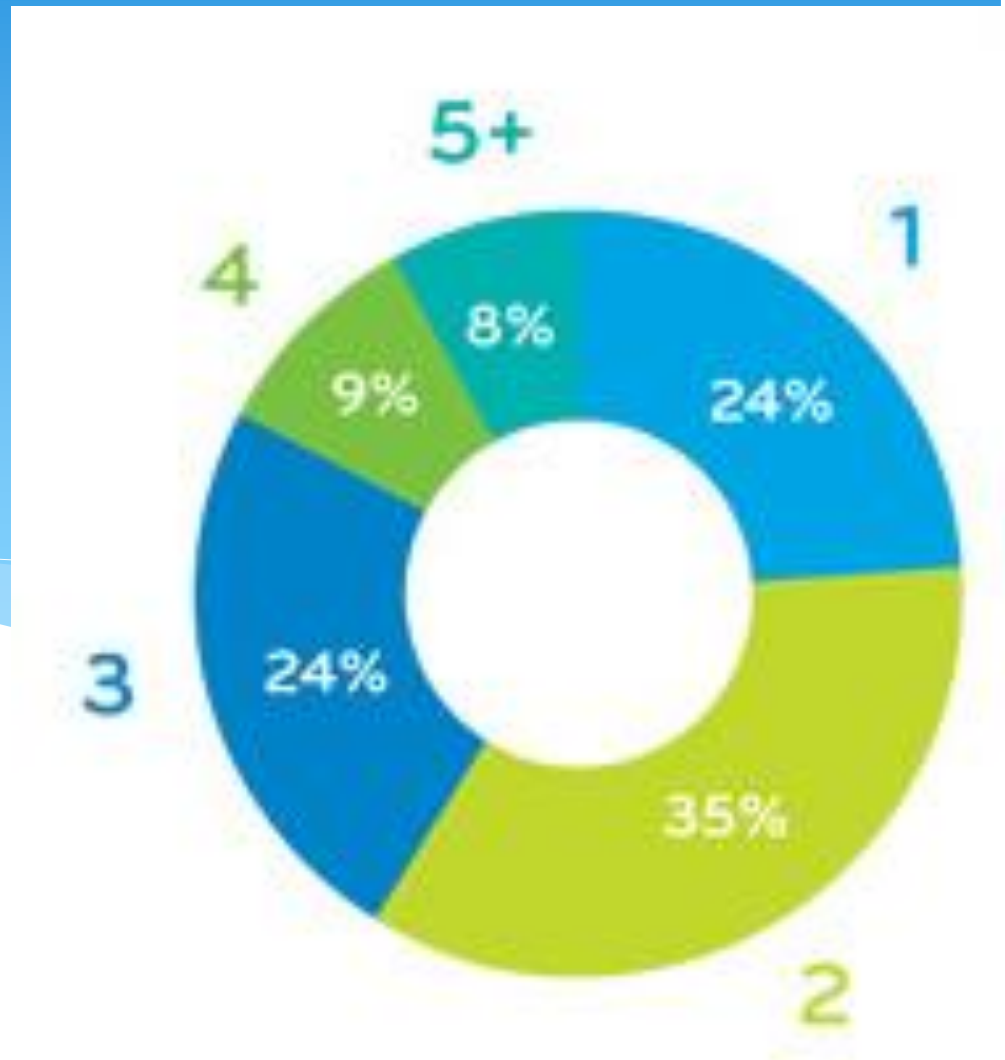
**The number of times Canadians change careers**

## **Reasons:**

Passion (35%)

Disillusioned (24%)

Layoffs (19%)





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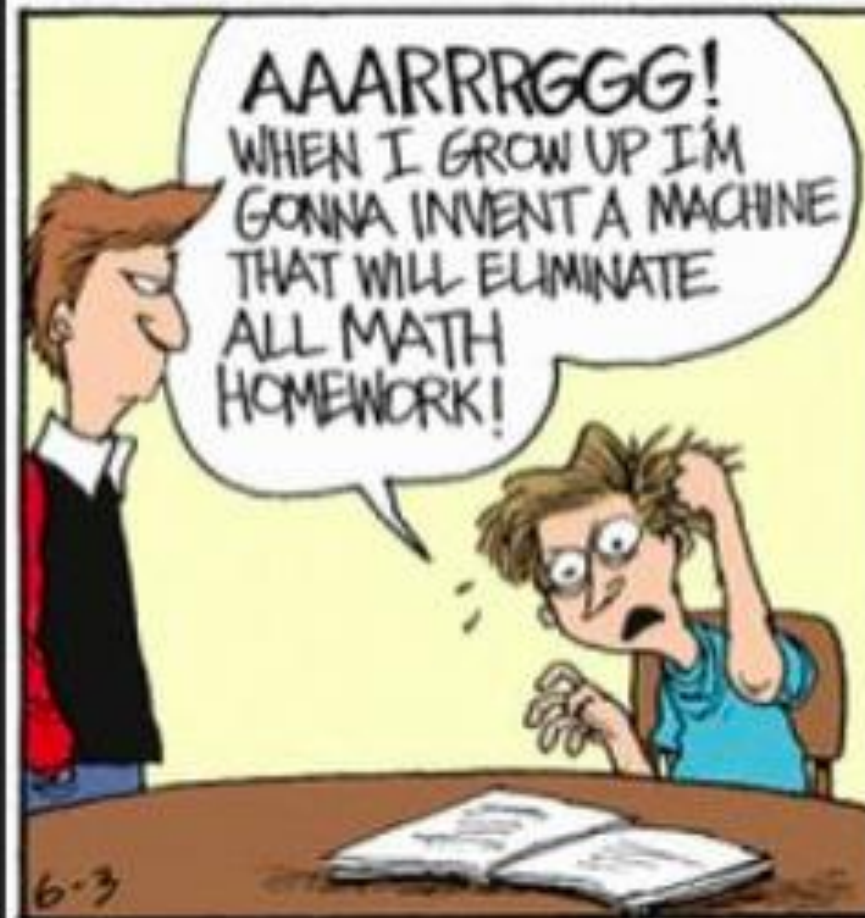
# How will **WE** learn science in 2050?

**Dr. Marina Milner-Bolotin**

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# Future Will Rely on Math & Science



# Learning Science in 2050

- Who will be learning science?
- Why will they be learning science?
- **How** will we be learning science?

**Yet, so far there has been no revolution in how we learn and teach science!**

# Information Access $\neq$ Knowledge

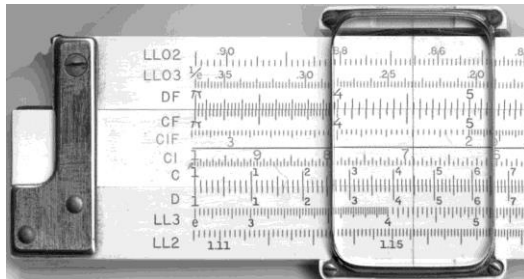
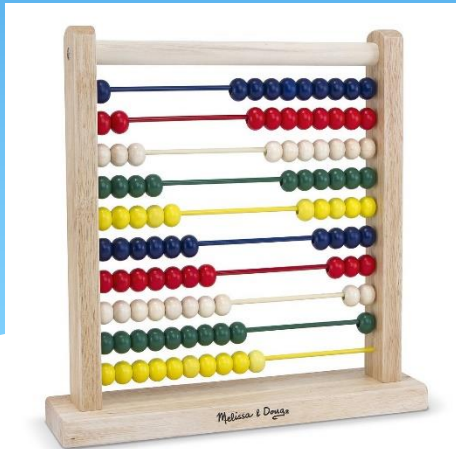
let me  that for you

Google Search

I'm Feeling Lucky

Type a question, click a button.

# Are modern students engaged in science deeper than we were?





# Science Achievements in Canada



SPOTLIGHT ON SCIENCE LEARNING:  
*The High Cost of Dropping  
Science and Math*

Let's Talk Science.  
(2013). Spotlight on  
science learning: The  
high cost of dropping  
science and math.

**AMGEN**<sup>®</sup>

let's talk   
**science**  
inspiring discovery

# Growing Science Disengagement

1. Less than 50% of secondary graduates, complete grade 11 and 12 level math & science
2. Science disengagement costs money to students, parents, and Canada

**20,000**

The number of Ontario students who return each year for a fifth year of secondary school, after meeting graduation requirements<sup>4</sup>.

# Need in Skilled Workers by 2020

## One million

The number of skilled workers  
needed in Canada by 2020.

Conference Board of Canada

In 2014, Canada – 35 million  
people, ~18,000,000 workforce

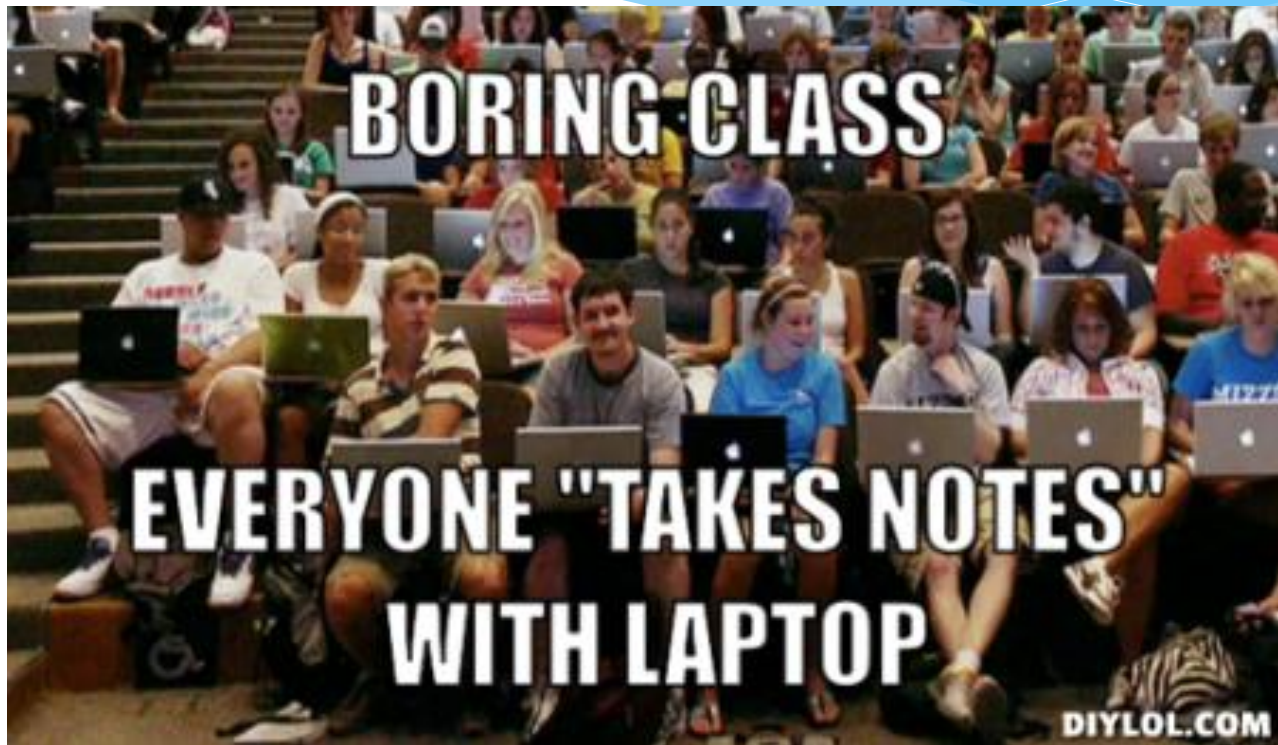




## Veritasium – Derek Muller

Is technology enough to revolutionize education?

# Technology Makes Teaching Harder



Science teachers often lack the knowledge needed for educating modern students.

# BC Professional Development for Teachers

Each year, BC teachers **have five days** that are deemed non-instructional and used for professional development.

# My Main Claim

**What limits modern science education is  
not the lack of technology but  
the lack of educators who are prepared  
to use it in new ways to engage students  
in math and science!**



# Technology Will Affect Learning through Changing Teachers

❖ **Content**

❖ **Context**

❖ **Collaboration**

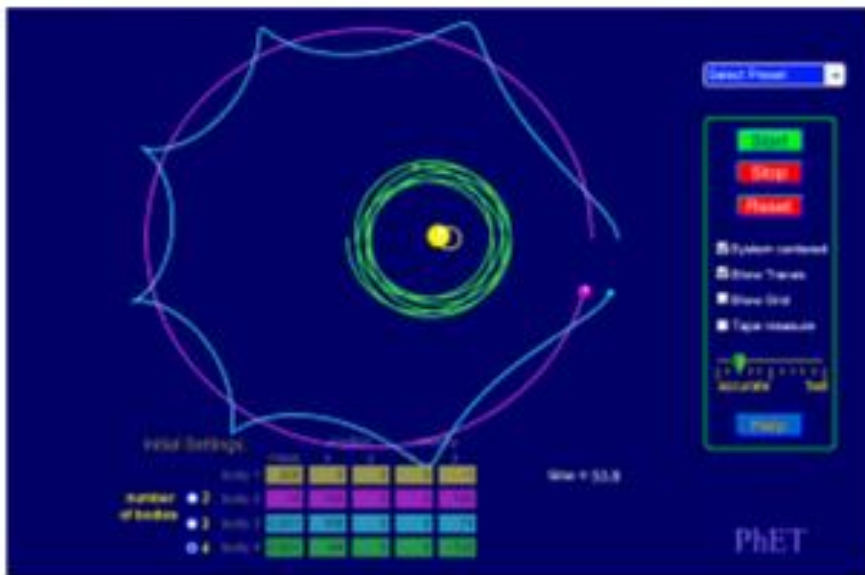
❖ **Personalized learning**





# Content: Technology offers playing with data

## My Solar System



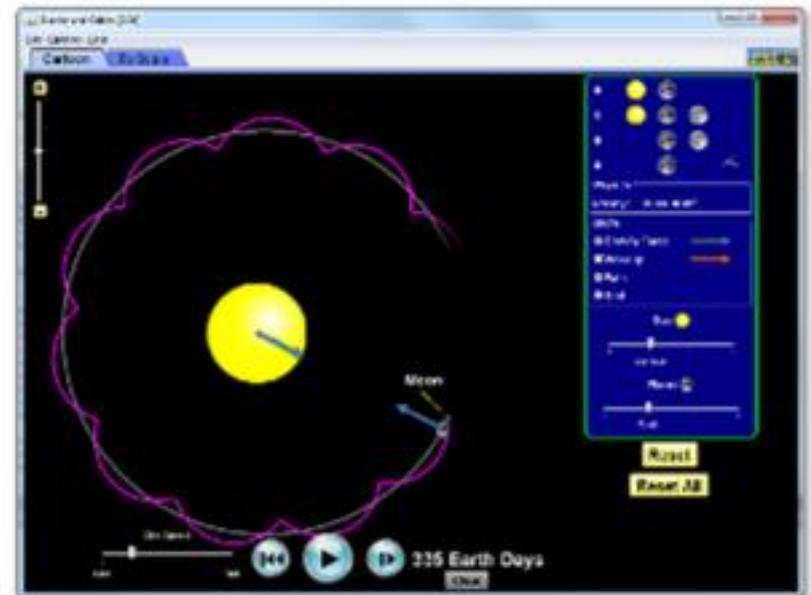
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Version: 2.04 ([change log](#))

## Gravity and Orbits



[Download](#) 1,513 kB

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# Context: Technology bridges science with real world



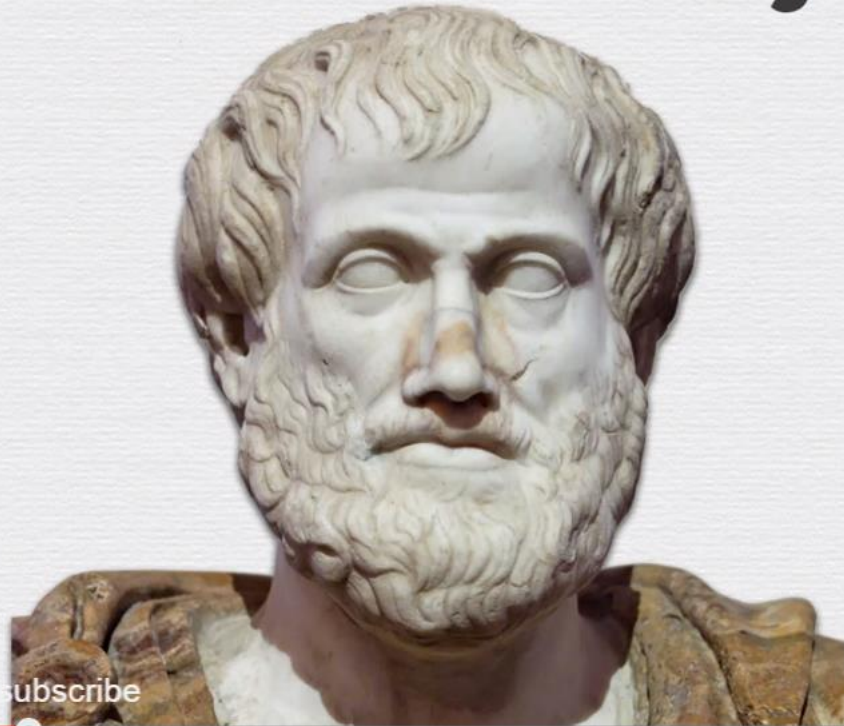
# Collaboration: Technology connects learners and experts



**MITOPENCOURSEWARE**  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

# Personalized learning: Technology will support teachers and students

## Aristotle for Everyone



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1:20 / 5:43



HD



Digital Aristotle: Thoughts on the Future of Education



# Caveat: Teachers use various technologies to inspire students

## Teacher



## Content Creator



Differential Reproductive Success

001 - Natural Selection

by Paul Andersen

7:28 / 12:03

# Revolutionizing Science Learning

**We have to change how we educate science teachers. Technology is not the answer- but technology in the hands of knowledgeable and inspiring teachers is!**

# A Nerdy Joke for a Nerd Nite

*There are 10 kinds of people in this world. Those who understand Binary, those who do not, and those who expected a Base Three joke.*

