

## Eamonn Corrigan – 3MT® Presentation

What would you think if I flipped a coin 63 times. But then only 2 came up heads. Ya, I'd also be a little suspicious, because the odds of that happening my random chance are 1 in 4.7 quadrillion. Seems like the coin might be rigged.

Well in a totally unrelated note, since the year 2000, 63 Nobel Prizes have been given out in physics and, oh ya, 2 have gone to women. It seems like the coin might be rigged. Well the underrepresentation of women in physics and STEM more generally, that stands for science, technology, engineering and mathematics. has been a huge problem for decades, research is clear that diverse groups are more productive and better at solving difficult problems. And so thankfully, many efforts have been taken to close the gap. But how well have these worked? The goal of my thesis was to answer this for the high school classroom with a focus on physics. We looked at high school because its been identified as the most influential time period for a students desire to pursue a future career in STEM. Despite this when I started my PhD there were no comprehensive data sets of the gender gap in high schools across Canada, or even Ontario.

And so we partnered with the Ontario Ministry of Education to obtain 11 years of detailed enrolment data. This included how many male, and how many female students took all STEM courses from grade 10 to grade 12. We then used this to calculate something called student continuation rate. Imagine If 100 female students took grade 10 science at a given school, and then only 19 of them ended up in grade 12 physics 2 years later. That would be a continuation rate of 19%. The provincial average. We also examined how continuation has been changing over time.

And so what did we find? Well the good news, if you consider STEM as a whole, things have been going great. The average continuation rate of female students is up in all STEM courses as is the average proportion of female students is in classrooms. But look a little bit closer.

Because considering STEM as a whole, hides what is really going on.

Still only about 1 in 3 students in grade 12 physics are female and that number has barely changed over the 11 years of data. At this rate, the gender gap would not close until 2103.

At the same time the continuation rate of male students in biology has been rapidly decreasing, the only science course with a decrease. Because of this the gender gap in Bio, is now larger than that seen in physics. It seems like our solution to a coin that always comes up heads, was to add a coin that always comes up tails. So what do we do with this information. Well, we've shown that future efforts to promote gender diversity in STEM, need to become much more targeted. Focus directly on areas like physics or engineering where large gaps still remain, while ensuring we don't create new inequalities in the process.

In short, please don't make this worse. Thank you.