HOW SUCCESSFUL IS THE ENCOURAGEMENT OF WOMEN TO STUDY STEM SUBJECTS IN THE UK?

INTRODUCTION

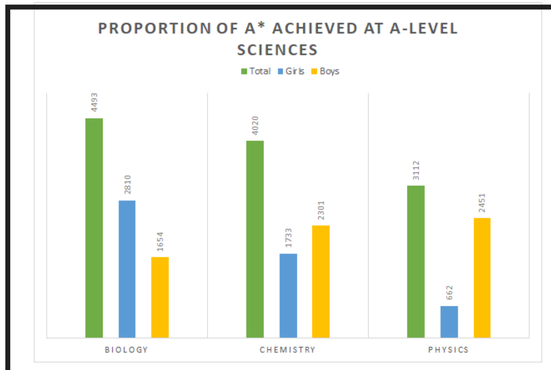
We have researched the proportion of girls and boys who decided to study further in STEM (Science, Technology, Engineering, Mathematics) subjects and investigated the change in female to male ratio in those subjects over the course of 5 years. We also looked into other factors, such as the population size and the number of total applicants to university, and discussed the extent of their influence.

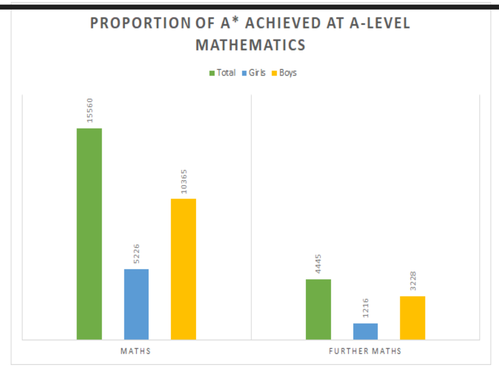
BACKGROUND

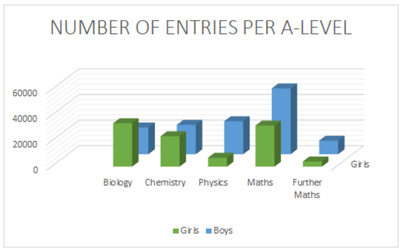
The media seems to always be talking about how women need to be encouraged into taking STEM subjects. By being given talks and attending lectures, we have realised how much of an impact this notion has had on society. We believe that over the years more women have started going into STEM related careers due to more opportunities being offered and more jobs being advertised. This has led us to believe that over the years there has been an increase in the percentage of women studying STEM subjects at university.

HYPOTHESIS

There has been an increase in the number of women studying STEM subjects at university over the last 5 years.





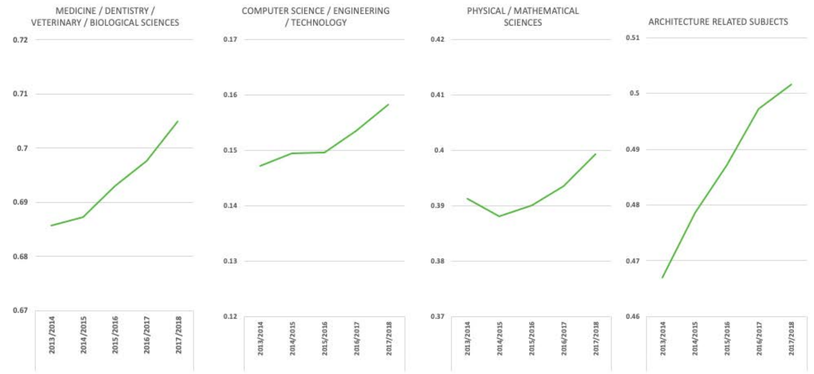


These graphs clearly show how generally boys tend to do better in Maths and Sciences at A-level than girls. This is partially due to the fact that there are a lot more boys entering into these subjects than girls.

Generally, girls seem to choose Biology and Chemistry over Further Maths and Physics. This would greatly affect the data from universities regarding the ratio of girls to boys entering the Maths and Physics degrees.

This graph also shows how the most popular subject at A-level seems to be Maths - however the ratio of males to females studying the subject is disproportionate.

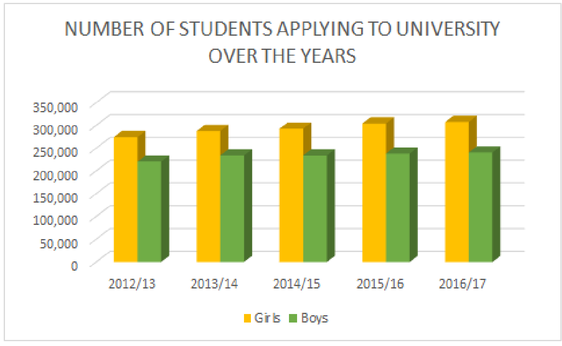
PROPORTION OF FEMALE UNDEGRADUATES STUDYING STEM SUBJECTS IN UK UNIVERSITIES OVER THE YEARS



Over the past 5 years, the proportion of female studying STEM subjects at university level in the UK has been increasing overall, where the most significant increase was in architecture related subjects which combines art with STEM subjects. The data shows that in 2017/18, more females are studying architecture related subjects compared to their counterparts.

Biology-related subjects including medicine are more popular amongst females, with around 68.5% of students being girls in 2013, which has increased to around 70.5% in 2018.

In computer science, engineering and technology, the proportion of females is extremely low, representing less than 16% of students. However, there has been a significant increase between 2015 - 2018, suggesting the positive influence in recent encouragement to study STEM subjects.
Similarly, with physical and mathematical sciences, there is a bigger gap with less than 40% of students being female. This might be due to the existing gender stereotypes in the social world, or simply the lack of encouragement amongst girls.
The gender gap is closing very slowly in some STEM subjects, (Computer science, engineering, technology, physical and mathematical sciences) but is widening in some as well (Medicine related and biological science) with the proportion of boys being less than 30%.
Does this means the boys need encouragement in some subjects, as well as the girls?



The graph on the left shows how over the past 5 years more females have applied to university than males. This implies that women are more likely to choose non-science related subjects, as the other graphs show how males tend to dominate most of the STEM fields.
It also rules out the possibility that fewer women attend university and therefore less study sciences as a result.

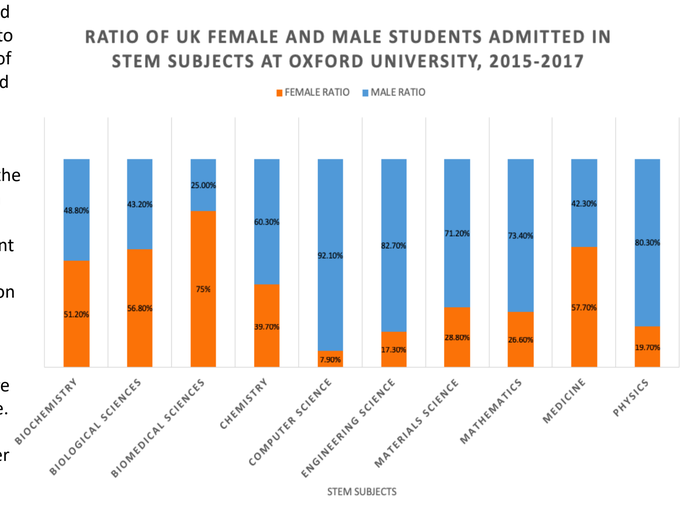
Another factor represented in the graph is the increase in population - over time more students overall have applied to university, suggesting that the size of each year's cohort is increasing. This might have an impact on the seemingly increasing number of women taking up STEM subjects - if there is a higher number of students, the number of women taking each subject would increase.

HIGHLY COMPETITIVE UNIVERSITY

Oxford University is probably one of the most popular and competitive in the world. By looking at the ratio of male to female candidates, it is possible to identify that in many of the STEM subjects there is a big gap between females and males admitted. The Oxford university selection process highly values an individual's passion and interest in the subject, alongside academic achievement. Also, the University of Oxford offers places relative to the ratio of the applications received. It could be that for females at high school level, the smaller ratio (7.9%) of females studying computer science is due to either a lack of encouragement or girls' preference for a mix of non-STEM subjects: however, more research is needed to come to a conclusion on this.

However, it is apparent that females dominate biology-related subjects, which could be due to the fact that there seems to be a clearer career path – leading into medicine.

This obvious disparity in some subjects can lead to gender inequality in technology-based world of work.



CONCLUSION

Overall, it seems to us that there is an increase in girls studying STEM subjects overall from 2013-2018. Even though there has been an increase in applications, the rate at which the latter is increasing is significantly slower than the rate at which the ratio of women to men is increasing for STEM subjects. For Biology-related sciences, the ratio is even more favourable to women - more women are now studying them than men. This not only shows an increase in interest, but also increase in opportunity.
However, it looks like the mathematical sciences are still chosen primarily by males, indicating how it might be harder to increase female interest in them. Maths is perceived to be complex and women have been historically stereotyped as not being able to cut it.

With this project, we believe that women have indeed been encouraged into studying STEM subjects at university, proven by the rapidly increasing proportion or girls choosing them at University.

We believe that the encouragement to study specific subjects should not just be limited to girls choosing STEM, but also boys choosing non-scientific routes or biological sciences.

LIMITATIONS / IMPROVEMENTS

Due to our project significantly relying on Secondary Data, our limitations were that we could not always access the whole dataset. This prevented us from seeing any outliers and misfits which could have changed our perspective on some of the results. However, it was all taken from the Higher Education Website, which we consider a reliable source.

For future studies, we could try to collect Primary Data focusing on our personal circumstances and then compare our results to Secondary Data.

BIBLIOGRAPHY

https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he for 'Proportion of Female Undergraduates studying STEM Subjects over the years'
https://www.ox.ac.uk/sites/files/oxford/Annual%20Admissions%20Statistical%20Report%202018.pdf page 20 for 'Ratio of UK Female and Male Students Admitted in STEM Subjects at Oxford University, 2015 – 2017
https://www.gov.uk/government/statistics/a-level-and-other-16-to-18-results-2017-to-2018-provisional for 'Proportion of A* Achieved at A-Level Sciences and Mathematics'
https://www.hesa.ac.uk/data-and-analysis/students/where-study for 'Numbers of Students Applying to University over the years'