



*Pymble Ladies' College*

# Student Research Conference

DEVELOPING A RESEARCH MINDSET

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**PROGRAM**

Tuesday 16 May 2023

# Program

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**3.30PM - Arrival and registration**

**3.50PM** ATRIUM FOYER, KATE MASON BUILDING, PYMBLE LADIES' COLLEGE

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**3.50PM - Welcome and Acknowledgement of Country**

**4.00PM** *Dr Sarah Loch, Director: Pymble Institute*

JOBSON LECTURE THEATRE, KATE MASON BUILDING

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**Curious minds: Developing a research mindset**

*Lucy Clark, Year 12*

JOBSON LECTURE THEATRE, KATE MASON BUILDING

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**4.00PM - Researching tricky topics**

**4.20PM** *Keynote speaker: Professor Fiona White*

JOBSON LECTURE THEATRE, KATE MASON BUILDING

How do you research tricky topics such as racism and diversity? Researchers need to consider issues relating to ethics, confidentiality, privacy and safety for participants and researchers. They also need to think about ways their work will have impact and create change. Find out about research methods which are often used when researching people and ways an experienced researcher chooses the best approaches for the inquiry question.

*Fiona is a Professor in Social Psychology at the University of Sydney. Her research is in effective strategies to promote equity, diversity and inclusion. She is currently the Director of the Sydney University Psychology of Intergroup Relations (SUPIR) Research Lab. Fiona has supervised many postdocs, postgraduates and honours students to completion. Most recently, she was the expert host of the ABC TV docuseries 'The School That Tried To End Racism' which received national recognition and a 2022 Logie nomination for the most outstanding factual or documentary program. Fiona has also advised Pymble students on the Year 12 anti-racism program, which they co-created, and she presented to the Pymble staff on diversity, equity and inclusion in October 2022.*

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**4.20PM - Climate policy research**

**4.40PM** *Keynote speaker: Ms Natalie Dajkovich (Ex-student, 2016)*

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How can research make an impact in public policy and shape the lives of everyday citizens? What factors do we need to consider when studying whole countries and where data is limited? Natalie draws upon her experience in Australian and international climate policy to unpack how researchers can begin to approach wicked and complex problems, like climate change, and how governments utilise such research in their decision making. Find out about career paths in government and skills you can begin honing to conduct research with impact.

*Natalie completed her studies at Pymble in 2016 and graduated with a Bachelor of Politics, Philosophy and Economics (First Class Honours) from the Australian National University. Her professional and academic interests focus on responses to climate change, with her thesis utilising a mixed methods design to study the effectiveness of emissions trading schemes internationally.*

*Natalie has chiefly worked in research and public policy for the Australian Government. She started her career providing economic policy advice to members and senators of parliament, and has since worked as a Senior Policy Officer at the Clean Energy Regulator and the Department of Climate Change. She is now working on international climate negotiations, where research is used to inform countries' emissions reduction targets and progress under the Paris Agreement.*

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**4.40PM - Panel discussion with Fiona and Natalie: How do you build a research mindset?**

**4.55PM** JOBSON LECTURE THEATRE, KATE MASON BUILDING

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**5.00PM - Student Research Sessions**

**5.55PM** You have the option of selecting one stream and remaining in this room for the next session or you can move between the rooms according to your choice of topic.

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# Program

5:00PM - 5:15PM	<p>STREAM A</p> <p><b>The impact of reducing adolescent screen time with greyscale: Extension Science project</b></p> <p><i>Sumeera Chapra (Year 12)</i></p> <p>As technology advances and phones become more prominent along with addictions, the importance of maintaining balance between being on your phone and turning it off is becoming increasingly more important within our society. A psychology study done by Burst (2021) found that colour impacts people's emotional responses and behaviour in marketing, which can be applied to the manufacturing of iPhones. Discover how the use of greyscale on smartphones can reduce a user's dopamine, thus also reduce the chance of addiction.</p>	<p>STREAM B</p> <p><b>Utilising a prompt to form a habit: Extension Science project</b></p> <p><i>Becca Peters (Year 12)</i></p> <p>Habits are automatic behavioural responses to environmental cues, thought to develop through repetition of behaviour in consistent contexts. There is extensive research regarding the formation of habits, however, there are minimal investigations that allow for comparison of forming a habit with and without the influence of a prompt (pre-existing habit). This experiment will utilise two groups as they form habits, one utilising a prompt and the other not, allowing for a comparison to investigate the ability for a prompt to make habit formation easier.</p>	<p>STREAM C</p> <p><b>What is the ideal form of government?</b></p> <p><i>Julie Sheng (Year 11)</i></p> <p>The essay investigates the various philosophical theories regarding the notion of the 'ideal' form of government. It will consider the arguments in favour of Western democracy as propounded by both Pericles and Amartya Sen. It will then compare this political system with autocracy, and explore the case made for the latter by Socrates, Thucydides and Hobbes. Throughout the work, both classical and modern history will be referenced as supporting evidence for the philosophical arguments discussed.</p>	<p>STREAM D</p> <p><b>Overcoming bias in AI: Strategies for equality</b></p> <p><i>Alice Mao (Year 9)</i></p> <p>As AI-powered technology enters widespread use for applications like face recognition and crime detection, issues have arisen regarding the transfer of human biases onto these systems through the data selection and machine learning processes. To prevent harmful outcomes such as targeting of ethnic minorities or outputs that represent negative stereotypes, global collaboration for impartial datasets and increased human intervention in AI learning might prove necessary. Developers must strive to minimise inequality before AI technology enters positions of everyday use.</p>
5:20PM - 5:35PM	<p>STREAM A</p> <p><b>Online communication and how it has evolved</b></p> <p><i>Leahara Wijesuriya, Alexa Wu and Celine Cai (Year 7)</i></p> <p>This research project will investigate how online communication has evolved to accommodate for new needs and wants, how this parallels the evolution of other languages in the past and how this is an organic development younger people online have formed due to the lack of punctuation in standard, written English.</p>	<p>STREAM B</p> <p><b>Stock market returns of COVID-19 vaccine companies</b></p> <p><i>Yuki Wang (Year 11)</i></p> <p>Stock Market returns of COVID-19 vaccine companies: A study into how the global COVID-19 pandemic brought Drug and Vaccine development into the market and the public mainstream.</p>	<p>STREAM C</p> <p><b>An abstract summary of why we yawn</b></p> <p><i>Ariana Azizmohammad (Year 7)</i></p> <p>Yawning is a common phenomenon observed in humans and animals, yet the exact purpose of yawning remains a topic of debate among researchers. Some scientists suggest that yawning helps to increase oxygen levels in the blood and regulate body temperature, while others propose that it is a social or emotional signal. Recent research has also linked yawning to the brain's role in regulating arousal and sleep-wake cycles. However, more studies are needed to fully understand the underlying mechanisms and functions of yawning.</p>	<p>STREAM D</p> <p><b>An economic evaluation on Pymble's canteen 'shadow market'</b></p> <p><i>Christy Xue (Year 12)</i></p> <p>This research adapts an economic examination into the cost of Pymble's current canteen service system. Through quantifying the 'shadow market', categorised by acts of lining up and purchasing food for friends at the canteen, the research aims to assess the impact of having an insufficient food allocation system, and develop an alternative strategy to optimally allocate lunches. Finally, this research also measures the welfare improvement of a modified food allocation system if it is hypothetically adapted by the College.</p>

# Program

5:40PM -  
5:55PM

STREAM A

## What makes Shakespeare 'Shakespeare'?

*Catherine Shi (Year 10)*

I seek to define Shakespeare's writing style, topics and language through a critical examination of his plays, sonnets and other works in order to understand what makes him so enduringly popular, influential and timeless. To give a thorough overview of what makes Shakespeare Shakespeare, my research relies on a variety of primary and secondary sources, including critical works, historical accounts, literary analyses and Harvard verified courses. I contend that his capacity for expressing the nuance of the human experience, his deft command of language and his creative use of form and structure have all added to his lasting legacy.

STREAM B

## The future of space appropriation and Kessler syndrome

*Kitty He (Year 9)*

The commercial space industry has boomed in recent years with ever faster-growing technologies. In the vast literature about the environmental impacts of space exploration and development, the majority focuses on changes to the earth's environment, while very little shines light on the growing issue of space pollution. Thus this research aims to discuss the various environmental consequences of space appropriation and the tradeoff between potential environmental benefits on earth and in space while specifically targeting the future of Kessler syndrome.

STREAM C

## The Science of Well-being: A student perspective

*Lucy Miller (Year 12)*

*Pymble* has been trialling an online course called 'The Science of Well-being for Teens' which was developed by Yale University in the United States of America. I recently undertook the course and learnt about the field of psychology. The course lets participants explore how to be happier, how to feel less stressed and how to thrive in high school and beyond. The ultimate goal of the program is for the participant to feel better and build healthier habits. In this presentation, I will discuss how this course can be used in school well-being programs, like our Mind Body Spirit time, and share my reflections on the experience.

STREAM D

## Correlation between temperature and the sound level of boiling water

*Manni Lin (Year 12)*

This project investigates the relationship between temperature and the sound level of the boiling water in an electric kettle. Inspired from the daily inquiry, when you boil a kettle for a cup of tea, why does the kettle quieten down as the water reaches the boil? The report provides a literature review that explains the main sources of sound in boiling water, nucleation and cavitation, and discusses the benefits of reducing sound intensity in various applications. Simultaneous experiments measure the continuous temperature and sound level of a home kettle. The methodology involves collecting raw data by measuring the temperature and sound level of boiling water using a PASCO thermometer sensor and a Zoom H4N Pro recorder.

5:55PM -  
6:00PM

## Conference conclusion

KATE MASON BUILDING ATRIUM



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