



TEACHING NOTES

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JACQUELINE DOHANEY STEM EDUCATOR

Synopsis

The case forms part of the Career Insights series, in which women STEM professionals are invited to talk about their STEM careers. This case examined the career journey and advice of Jacqueline (Jackie) Dohaney, a STEM Educator at Swinburne University in Melbourne, Australia.

The case explains some of the factors that influenced Jackie to embrace STEM when she was younger, and the educational pathway she took towards her current role in STEM.

Jackie identified areas of opportunity for students in STEM in the future. She also talked about the key characteristics of her role. Jackie provided advice for students including 'trying things out' and following their curiosity.

Authors

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Teaching objectives

This case explores aspects of Jackie's career in STEM. The case forms part of the Career Insights series, in which women STEM professionals are invited to talk about their STEM careers.

The case is intended to provide insight for students into one woman's STEM career journey.

The case covers several areas, including:

- Factors that influence students towards STEM careers
- Opportunities for careers in the STEM sector
- How students may leverage their passion for play, and their curious natures, to exploring STEM careers

There are several approaches open to teachers for this case.

For a year 7-8 class, teachers can allocate the case as reading material for a tutorial type session, where the case can be analysed and discussed amongst a group of students. The case needs to be read in advance of the discussion session, to avoid delay and leave more time for the discussion of some of the key issues of the case. It is suggested that students are divided into manageable groups (between 2-3 students), where one student is the appointed spokesperson for the group. This helps to facilitate greater discussion about the case. The students are then shown the end of case study questions, one at a time. Students would then be asked a certain question, and the group would discuss it for not more than five minutes. The teacher would ask a particular group for their answer and question their rationale behind their answers (probing their reasons). After students' views about the case have

been obtained, the teacher should summate what he or she believes to be the correct answer(s) to the case questions.

For a year 9-10 class, the teacher can use the same approach as outlined for Year 7 & 8 students. Alternatively, the case is read by all students individually, and then they discuss the case with the person sitting next to them using the "discussion themes and questions". In the case session itself, students can be assessed on their class participation. Furthermore, after the case session students are required to fill out a brief reflective form outlining, their most valuable contributions or comments during the class. Students can be awarded marks based on their case preparation, their depth of thought, the way they contribute to the discussion, their critical analysis, and synthesis of the case material, and their active involvement and contributions within the classroom situation.

The case ends with Jackie offering advice for future STEM professionals. Jackie proposes several options for things students could try out to help them link life's curiosities to exploring STEM.

Discussion sections and key themes

Case outset

- Initial sounding of the class as to what they feel the case is about.
- Ask the class to plot the pathway Jackie took as she journeyed through her STEM career.
- Ask the class, what do they feel are the three most important lessons that they took away from reading the case?
- A synthesis of reflections from students can be placed on a whiteboard.
- This acts as a useful preamble and encourages class participation.

Finding her career path

- Here, ask students to reflect on the factors that influenced Jackie towards pursuing a career in STEM.
- The focus here should be on the role different people and places played in Jackie's life. These include Jackie's family members, her environment, and her teacher.
- The class can be asked if they can identify anyone in their lives who might influence their passion for STEM.
- A discussion on the influence of role models can ensure, and the role they play in students' lives.



Travel and a love of learning

- Here, the discussion can focus on identifying all of the geographical locations that Jackie has travelled to throughout her career.
- Students can be invited to discuss places they might wish their future careers to take them.

What does the future look like?

- The case discussion can then move onto identifying opportunities for students in STEM in the future.
- Students can be invited to reflect on the areas that Jackie suggests opportunities exist.

Combining play with work

- A central element of this case is the connection between Jackie's personal interests and their connection to her career.
- Students could reflect on the games and activities they like to do outside of school.
- What are some of the key skills involved in those games and activities that could be beneficial for a STEM career?

What's the best thing about working in science?

- What are some of the best things about being a scientist, according to Jackie?
- Here, students could note the key aspects of her role.
- Students could be invited to discuss some of the characteristics that they would like their jobs in the future to have.

What does a typical day look like for Jackie?

- What does a STEM Educator do at work?
- Here, the students could be directed to consider the many tasks Jackie mentions performing.
- Students could be invited to discuss the purpose of work and to reflect on the overarching aim of science.

Career opportunities

- What future career opportunities for students does Jackie identify in science, technology, engineering, and math?
- Here, students could consider the issues

that are important to them and discuss the different types of jobs/roles that STEM professionals might have in the future to help solve problems related to these areas.

Advice for students

- What advice does Jackie provide to students who might be interested in STEM careers?
- Invite students to discuss how they could put Jackie's advice into action.

There are no right or wrong answers to the above questions or discussion points. Suggestions are aimed at encouraging students to explore Jackie's journey as a STEM Educator and to spur curiosity towards the overlap between personal passion, a curious mindset, and STEM careers.

Outside or supplementary reading

The following reports are of interest to understand the future of STEM careers and opportunities within the STEM sector.

We asked 6 scientists what inspired them to pursue a career in science. Here's what they said (The Conversation, 2022) This article invited six scientists to talk about the things that inspired them towards a career in science. The article has parallels to what Jackie talks about in the case study. Namely, the influence of family, how the scientists were driven by their curiosity, and the importance of getting out and experiencing nature. Source: <https://theconversation.com/we-asked-6-scientists-what-inspired-them-to-pursue-a-career-in-science-heres-what-they-said-172397>

Australia's STEM Workforce. Science, Technology, Engineering and Mathematics (2020) The Australia's STEM Workforce: 2020 report uses data from the Australian Bureau of Statistics (ABS) Censuses of Population and Housing (the Censuses) to present an analyses of people with science, technology, engineering and mathematics (STEM) qualifications in

Australia. The report discusses the employment outcomes for people with STEM qualifications in Australia, the employment prospects of students who graduate with STEM degrees, and key considerations in the STEM sector, relevant to an Australian context. Source: https://www.chiefscientist.gov.au/sites/default/files/2020-07/australias_stem_workforce_-_final.pdf

Advancing women in STEM (Australian Government 2019) Addressing gender inequities in STEM is a key challenge not only for Australia, but for many countries across the world. That's why there has never been a more important time for the Australian Government to continue showing leadership to drive change in our systems, institutions and workplaces to encourage and enable more girls and women to pursue STEM studies and careers. This report illustrates the Australian Government's commitment to ensure all Australians, regardless of gender, have the opportunity for rewarding, high income jobs in workplaces that value the talent and skills of their people. Source: <https://www.industry.gov.au/sites/default/files/2019-04/advancing-women-in-stem.pdf>

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