



# TEACHING NOTES

## ENTERPRISE + STEM

The  
INVERGOWRIE  
Foundation



## TANYA HILL ASTRONOMER

### 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 Dr Tanya Hill, an astronomer who works at the Melbourne Planetarium at Scienceworks, Australia.

The case explains some of the factors that influenced Tanya to embrace STEM when she was younger.

Tanya encourages us to be curious about the world around us, and to enjoy the process of finding your way in the world.

### Authors

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## Teaching objectives

This case explores aspects of Tanya'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:

- How students may embrace their curiosity to explore future careers in the STEM sector.
- The importance of role models and working together
- Enjoying the journey is just as important as getting to the destination

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 they believe 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.

## 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 Tanya 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, the case facilitator can ask students to reflect on the factors that influenced Tanya towards pursuing a career in STEM.
- The focus here should be on the key factors influencing Tanya's love of science. These include her experiences as a young girl, the people who encouraged and inspired her, and the availability of technology (i.e. a telescope) to help her explore her interests.
- 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.



### Overcoming fears about the unknown

- Here, the discussion can focus on identifying something that they might be afraid of in the natural environment (e.g. the dark) and how learning more about it can turn it from something potentially scary into something wonderful.
- Students can be invited to discuss how a greater understanding of nature can demystify the world around us.

### What's the best thing about working in science?

- What are some of the best things about being a scientist, according to Tanya?
- 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.

### The importance of curiosity

- Tanya mentions 'curiosity' multiple times in the case. Students can be invited to reflect on how curiosity has played a role in Tanya's life and career.
- Students could be directed to consider what they are curious about, and how they could possibly turn their curiosity into a career.

### Working together

- What does Tanya say about working together?
- Students can be invited to consider why working together can potentially achieve greater outcomes than simply working alone.

### Girls in STEM

- Tanya provides several points of advice about girls in STEM.
- What are the key messages Tanya is communicating in the case?
- Students can be invited to reflect on Tanya's insights.

### 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 Tanya suggests opportunities exist.

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### Career opportunities

- Here, students could consider what's 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 Tanya provide to students who might be interested in STEM careers?
- Invite students to discuss how they could put Tanya'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 Tanya'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.

**Science needs true diversity to succeed – and Australian astronomy shows how we can get it (The Conversation 2019)** This article communicates the need for diversity in astronomy. It further calls for the importance of working together – having lots of different hands – to achieve breakthroughs in science. This article parallels what Tanya talks about – that we need diversity in STEM. The article

mentions multiple forms of diversity. Can the students identify important diversity factors for a better workforce? Source: <https://theconversation.com/science-needs-true-diversity-to-succeed-and-australian-astronomy-shows-how-we-can-get-it-128122>

**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 analysis 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](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 have the opportunity for rewarding jobs. Source: <https://www.industry.gov.au/sites/default/files/2019-04/advancing-women-in-stem.pdf>

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