



PHILANTHROPY AND STEM

A case study

Wendy Lewis
Chair of the Invergowrie Foundation
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Overview

- The Fourth Industrial Revolution
- Snapshot of Philanthropy and STEM
- Brief History of the Invergowrie Foundation
- Why STEM?
- Repositioning the Invergowrie Foundation
- Conclusion and Questions

The Fourth Industrial Revolution

World Economic Forum Video



Snapshot of Philanthropy and STEM

- Changes in philanthropic giving
- Philanthropy Australia – The Peak Body for Foundations and Trusts
- PA Education Funders Group
 - STEM focus in July
- Ian Potter Foundation – its focus

Brief History of the Invergowrie Foundation



Invergowrie Homecraft Hostel



W.E. McPherson

Brief History of the Invergowrie Foundation

- Invergowrie is gifted to the Association of Headmistress's of Independent Girls' Schools in Victoria (AHIGSV) in 1933 by W E McPherson
- Run as a Homecraft Hostel until 1975
- In 1990 the property is sold for \$3m
- In 1992 the Invergowrie Foundation is established to advance the education of girls and women in Victoria
- As at 30 June 2016 the Foundation is valued at \$14m and has distributed \$8.7m since its inception

The need to develop our talent pool

"For reasons beyond education and professional qualifications or willingness to contribute or a desire to be a part of our society ... too many of our fellow Australians are denied the opportunity to reach their potential."

- David Morrison, Chair of Diversity Council Australia, Australian of the Year 2016

The need to develop our talent pool

“With estimates that 75 per cent of the fastest growing occupations require STEM skills, Australia will depend on a workforce that has necessary STEM capability to drive innovation and competitiveness in the global economy.”

(Industry innovation and competitiveness agenda, 2014: A more skilled labour force – Improving education and training)

Gaps

Primary School gaps

- Numeracy and Literacy issues
- Lack of specialist science and maths teachers
- Creativity and innovation gap
- Early stage where awareness of technology needed
- Digital skills in question

Secondary School gaps

- 40% teachers teaching out of field
- Drop off in higher level maths and science for girls
- Career decisions start to be explored
- Parents, teachers, role models play an important role

Transition of most concern

- The transition between primary and secondary has the most impact on STEM participation.
- Lack of knowledge and communication on types of jobs available
- Time to build confidence in girls for STEM study
- Need more engagement from parents and more knowledge provided to teachers
- Role models play a big part

Skills for the 4th Industrial Revolution

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility



in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



Source: Future of Jobs Report, World Economic Forum

Women in Science/STEM

Why we need more women in STEM

- diversity, resulting in greater creativity and reducing potential bias leading to improved research quality;
- representation of the population in research delivery, as public research is often directed at societal challenges impacting all population sub-groups;
- a larger talent pool to source professionals from; and
- human capital and innovation, thereby lifting national economic growth and international competitiveness

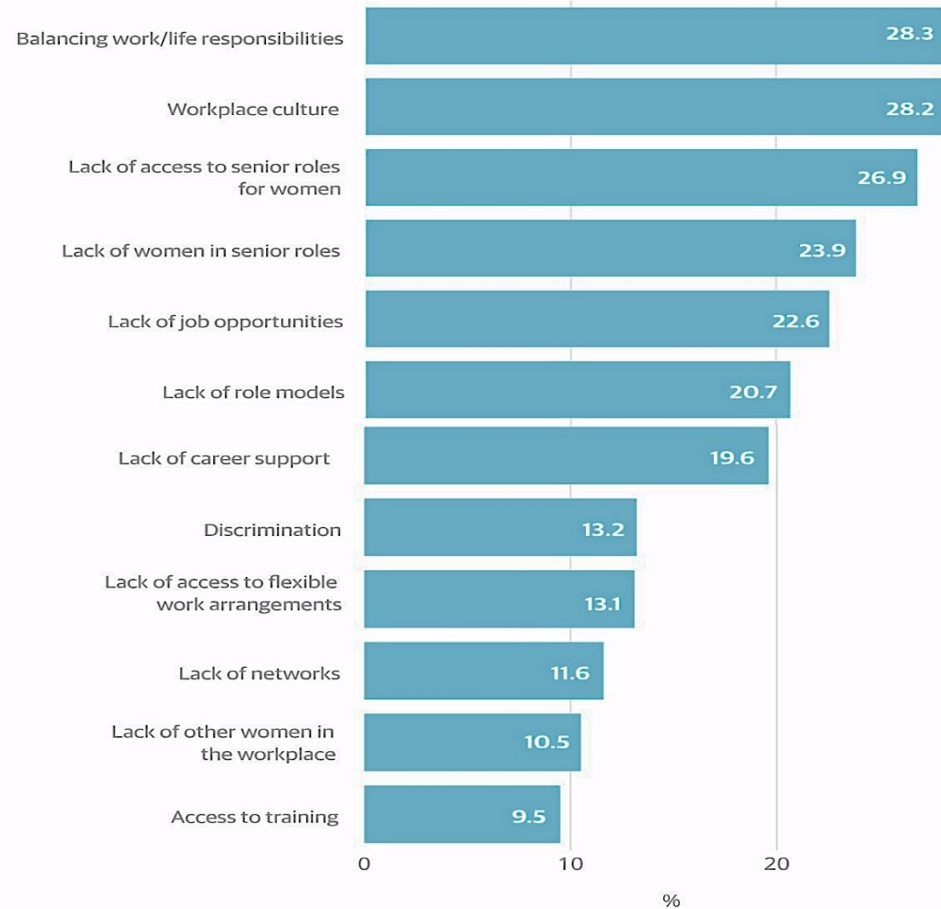
Gender gaps

- Women made up 55% of university students in Australia (9th of 27 countries measured)
 - Trades still dominated by males
- Big increase is in teaching and nursing
 - 29,419 women beginning a teaching degree c.f. 7872 men
 - 15,150 women beginning nursing degree c.f. 2316 men
- Only 28% of ICT workers are women (ACS and Deloitte's digital pulse). This number compares to 43% of people in other professional industries.
- Women in engineering numbers are stagnant at 14% and a high drop-out
- Men are still earning more than women in a majority of industries

Barriers in advancement in STEM

Reported barriers to career advancement in STEM

Respondents said the following factors significantly impeded their career progress



Repositioning The Invergowrie Foundation

- In August 2015 the Invergowrie Council met to discuss advances in philanthropic giving and to explore how best to deliver on its mission *to advance the education of girls and women in Victoria*
- The Council engaged a consultant to assist in exploring and identifying the opportunities available to the Foundation. The key points that came out of the process were:
 - *We revisited the history of Invergowrie to remind us of how we started;*
 - *We reviewed the primary objects as outlined in the Memorandum of Association*
 - *We determined that we wanted to move away from our traditional grant-making approach of providing transactional grants and to reposition the Foundation by identifying an area of focus where the Foundation could make a greater contribution that would have an impact*

Repositioning The Invergowrie Foundation

- So with the parameters in place we embarked on testing whether our initial idea of focusing on STEM would be worthwhile and more specifically our ideas of:
 - *undertaking some Research to summarise what is happening in the STEM area;*
 - *how to improve teaching outcomes;*
 - *creating a STEM camp for girls.*
- The Council approved the Consultant's brief and for the next 6 months a desktop review of the literature on STEM was undertaken; and
- the Consultants undertook a series 25 interviews (some face to face and some by phone) with selected businesses, universities, schools, government departments and individuals across Victoria, Interstate and overseas.

Repositioning The Invergowrie Foundation

- The following are some of the points coming from the desktop research and the interviews that were undertaken:
 - *Businesses competing in a global economy driven by data, digital technologies and innovation will need more employees trained in STEM*
 - *Estimates are that 75% of the fastest growing occupations require STEM skills*
 - *Modelling by PwC finds that shifting just 1% of the workforce into STEM roles would add \$57.4b to GDP (based on net present value over 20 years)*

Repositioning The Invergowrie Foundation

- Evidence shows that high performing countries are characterised by:
 - *A strong basic research approach that provides technical know-how and step-change ideas;*
 - *A culture of risk – assessing it, managing it and taking it; openness to new ideas*
 - *Career pathways from academia to industry and visa versa*
 - *A reliable pipeline of STEM graduates whose skills are valued by employers*
 - *A STEM-literate population that celebrates discovery and entrepreneurship*

Repositioning The Invergowrie Foundation

- Given that an estimated 75% of the fastest growing occupations, including those in the creative industries and humanities, will require STEM related skills and knowledge, there is an imperative for introducing these foundational skills into the primary and pre-primary curricula
- There will also be a growing need for the broad skills that STEM fosters. Critical thinking and problem-solving, analytic capabilities, curiosity and imagination have all been identified as critical "survival skills" in the workplace of the future.
- Women are a significantly under-utilized resource who have the potential to boost the labour force in this sector and provide a larger talent pool within which to search for the best and brightest.

Repositioning The Invergowrie Foundation

- Some of the societal challenges that we are facing include:
 - *Health, demographic change and wellbeing*
 - *Food security, sustainable agriculture and forestry, marine and the bio economy*
 - *Secure, clean and efficient energy*
 - *Resource efficiency*
- All of these challenges will require STEM associated skills to solve.

Repositioning The Invergowrie Foundation

- The outcome of this Strategic Review based on the work undertaken over this 6-month period identified that an opportunity does exist for the Foundation to make a significant mark in STEM Education through a staged strategy.
- The first step of this strategy is to Commission a report that will provide a “roadmap” of understanding of STEM Education in Australia from a cross-sector perspective (business, government, universities and schools) and with a particular focus on how girls and women are faring.
- It is anticipated that the report will highlight the need for a new approach to philanthropic investment and cross-sector engagement in order to improve STEM education in Australia.

Repositioning The Invergowrie Foundation

- We are now in the process of seeking out a partner to undertake the research that will provide a map of the landscape and enable the Invergowrie Foundation to have an impact in this area.

Repositioning The Invergowrie Foundation

When gender balance is aligned with the real world, it is more likely that the research will, accordingly, be better aligned, and so be more productive and relevant to the real world applications of the work.

Gender balance is also about social justice, fairness and human rights. If all people are equal, then all should be able to experience equal opportunity, including the circumstances that enable them to engage successfully in STEM education and careers.

Conclusion and Questions

There is currently a lot of interest in STEM at the moment.

The Invergowrie Foundation hopes to make a contribution in this area that will impact both policy and create systemic change.

Thank you

I would now like to open the remainder of the session up to questions.

