

EDI in STEM: What it is, why you want it & how to get it

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  drimogencoe

www.ryerson.ca/edistem

Vice President, CSMB



Lepton Photon 2019
Toronto August 4th

"Ryerson is at the heart of Toronto, and Toronto is in the 'Dish With One Spoon Territory'. The Dish With One Spoon is a treaty between the Anishinaabe, Mississaugas and Haudenosaunee that bound them to share the territory and protect the land. Subsequent Indigenous Nations and peoples, Europeans and all newcomers have been invited into this treaty in the spirit of peace, friendship and respect."

Ryerson University Land Acknowledgement
<https://www.ryerson.ca/aec/land-acknowledgement/>



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Land acknowledgement is a call to action – what is your response?

Ryerson University Land Acknowledgement
<https://www.ryerson.ca/aec/land-acknowledgement/>



Science
Home News Journals Topics Careers

Yammine et al. 2018

SHARE
LETTERS

Social media for social change in science

Samantha Z. Yammine^{1,2}, Christine Liu³, Paige B. Jarreau^{1,4}, Imogen R. Coe¹

• See all authors and affiliations

Science 13 Apr 2018
Vol. 360, Issue 6385, pp. 162-163
DOI: 10.1126/science.1257303

POLITICS
2017

Politics Policy Opinions Briefs The Weekender LIVE INTEL

OPINIONS

How diversity makes science work better

By Dr. Imogen R. Coe. Published on Sep 18, 2017 10:57am

Email Facebook Twitter LinkedIn

Just over 25 years ago, the Canadian Journal of Physics published an article by Dr. Gordon Freeman, a chemistry professor, in which he asserts that "women who work outside the home contribute to the moral degeneration of their children."

THE LANCET
2019

S0140-6736(18)33188-X

Doctopic: Review and Opinion

Coe et al. 2019 The Lancet

REVIEW

Organisational best practices towards gender equality in science and medicine

Imogen R Coe, Ryan Wiley, Linda-Gail Bekker

In August 2018, the president of the World Bank noted that "Human capital"—the potential of individuals—is going to be the most important long-term investment any country can make for its people's future prosperity and quality of life. Nevertheless, leaders and practitioners in academic science and medicine continue to be unaware of and poorly educated about the nature, extent, and impact of barriers to full participation of women and minorities in science and medicine around the world. This lack of awareness and education results in failures to fully mobilise the human capital of half the population and limits global technological and medical advancements. The chronic lack of recruitment, promotion, and retention of women in science and medicine is due to systemic, structural, organisational, institutional, cultural, and societal barriers to equity and inclusion. These barriers must be identified and removed through increased awareness of the challenges combined with evidence-based, data-driven approaches leading to measurable targets and outcomes. In this Review, we discuss these issues and highlight actions that could achieve gender equality in science and medicine. We survey approaches and insights that have helped to identify and remove systemic bias and barriers in science and medicine. We propose tools that will help organisational change toward gender equality. We describe tools and mandated quotas at national or large-scale levels (eg, gender parity), techniques that address gender equity through facilitated organisational cultural change at institutional levels, and of core competencies at individual levels. This Review is not intended to be an extensive review of currently available on achieving gender equality in academic, medicine and science, but rather a synthesis of multifactorial solutions.

Lancet 2019; 393: 187-93
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(Dr Wiley PhD); SHR Health, Toronto, ON, Canada
(Dr Bekker PhD); and The Desmond Tutu HIV Centre, Institute of Infectious Disease and Molecular Medicine, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa
(Prof L G Bekker PhD)
Correspondence to: Prof Imogen R Coe, Department of Chemistry and Biology, Ryerson University, Toronto, ON M5S 2C3, Canada
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For more on the Lancet Women Initiative see <https://www.thelancet.com/women>

Science
2015

Home News Journals Topics Careers

Articles Find Jobs Career Resources Forum for Employers

SHARE

Better advice for 'Bothered'

By Science Careers Staff | Jun 4, 2015, 11:00 AM

The deleted Ask Alice post offering advice to "Bothered" a female postdoc whose male adviser "won't stop looking down my skirt" brought a torrent of critical responses. Many critiqued the original advice: "As long as your adviser does not move on to other advances, I suggest you put up with it, with good humor if you can." Most criticized Science Careers for posting it. And some filled the gap they felt the

OPINION

How we can (finally) put an end to 'manels'

IMOGEN COE
CONTRIBUTED TO THE GLOBE AND MAIL
PUBLISHED NOVEMBER 12, 2017
UPDATED NOVEMBER 13, 2017

Imogen Coe is Dean, Faculty of Science, Ryerson University.

The Globe and Mail's public health reporter André Picard recently withdrew from an invited panel at the 2017 Trotter Public Science Symposium at McGill

2017

EDI in STEM: What is it?

Equity – active fairness, identifying & removing barriers, bias, etc., NB: ≠ equality

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Inclusion – ensuring the active participation in an organization, group, structure, etc.

Quote: “a sense of belonging is the heartbeat of inclusion”


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Inclusion – ensuring the active participation in an organization, group, structure, etc.

Quote: “a sense of belonging is the heartbeat of inclusion” ★ *Pay attention to who is participating in dialogue or decision making. Allyship.*



We live in a world awash with stereotypes (including about what a scientist looks like and how a scientist should behave). Academic science, like society, integrates racism, sexism, homophobic, ableism, ageism etc. structurally. There are barriers built on stereotypes.

That academia is a meritocracy is a measurable (by academics) falsehood



The
EQUITY MYTH
Racialization and Indigeneity at Canadian Universities
FRANCIS HENRY, ENAKSHI DUA, CARL E. JAMES, AUDREY KOBAYASHI, PETER LI, HOWARD RAMO, and MALINDA SMITH

392 pages, 6 x 9
6 graphs, 33 tables

Paperback
Release Date: 01 Jun 2017
ISBN: 9780774834896



The long read
The myth of meritocracy: who really gets what they deserve?
Sorting people by 'merit' will do nothing to fix inequality. By Kwame Anthony Appiah
Fri 19 Oct 2018 06:00 BST
Michael Young was an inconvenient child. His father, an Australian, was a musician and music critic, and his mother,

The Huffington Post
'When You're Accustomed to Privilege, Equality Feels Like Oppression'

The Myth of Meritocracy Protects Those with Power & Privilege

Quality of evidence revealing subtle gender biases in science is in the eye of the beholder

Ian M. Handley^{1*}, Elizabeth R. Brown^{2,3}, Corinne A. Moss-Racusin¹, and Jessi L. Smith⁴

¹Department of Psychology, Montclair State University, Montclair, NJ 07070-3440; ²Department of Psychology, University of North Florida, Jacksonville, FL 32226; and ³Department of Psychology, Seton Hall University, Jersey City, NJ 07310

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved September 16, 2015 (received for review May 31, 2015)

Scientists are trained to evaluate and interpret evidence without bias or subjectivity. Thus, growing evidence revealing a gender bias against women—or favoring men—within science, technology, engineering, and mathematics (STEM) settings is provocative and raises questions about the extent to which gender bias may contribute to women's underrepresentation within STEM fields.

Why Men Don't Believe the Data on Gender Bias in Science

ALISON COIL, SCIENCE 08.25.17 08:00 AM

WHY MEN DON'T BELIEVE THE DATA ON GENDER BIAS IN SCIENCE




“Scientists base their professional identities on being objective, forgetting they are human”

Math & physics are disciplines with higher levels (cf. chemistry & biology) of belief in fixed mind-set versus growth mindset – for gender, race, ethnicity, etc.

Scientists/engineers are the most resistant to accepting and believing the data & evidence in support of gender+ bias, along with maintaining a firm belief in meritocracy despite ample evidence (i.e. scholarship) that meritocracy is a myth.

Excellent primer on the data & evidence for bias in STEM



July 24th 2019




Unconscious bias & challenges to fair assessment

PROFESSOR MAYDIANNE ANDRADE

Professor of Biological Sciences
Acting Vice Principal Academic & Dean
Vice Dean Faculty Affairs & Equity

PROFESSOR BRYAN GAENSLER

Professor of Astronomy
Director Dunlap Institute for Astronomy and Astrophysics

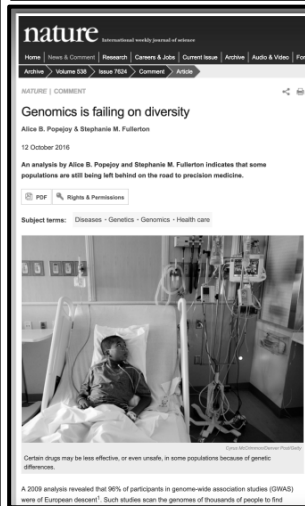
<https://www.youtube.com/watch?v=rRezSINPbME&t=2841&fbclid=IwAR2eeKyVb8bm2VPvVjiX5l461jEYrtEcLKhjGzqMW38PEsc6ru380YvQNs>

EDI in STEM: Why you want it?

EDI in STEM: Why you want it

Because you get better science
Because you get better innovation
Because you get better ROI

Failure to incorporate diversity into science & medicine leads to very bad science & medicine e.g. AI, tech, drugs, genomics

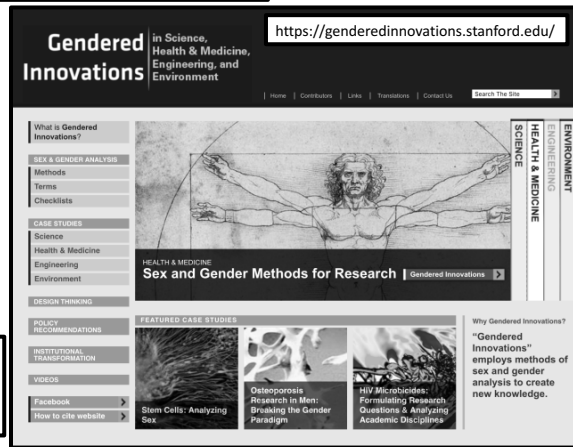


Heart disease kills mostly women, so why are they excluded from drug trials?

A Montreal study shows two-thirds of researchers and drug companies test treatments on men.
CHARLIE FREELMAN, MONTREAL GAZETTE | Updated: July 26, 2018



"Increased attention to diversity will increase the accuracy, utility and acceptability of using genomic information for clinical care".



EDI in STEM: Why you want it

Because you get better science
Because you get better innovation
Because you get better ROI

Because you need it to meet funding expectations
(CIHR, NERC, CRCs, CERCs, NIH)

Looking for a grant?
SGBA+ incorporated into research mandatory @ CIHR,
NSERC, SSHRC
Demonstrate EDI for HQP component (30%) @ NSERC



**NSERC
CRSNG**

Guide for Applicants: Considering equity, diversity and inclusion in application




CIHR Institute of
Gender and Health

**SCIENCE IS
BETTER WITH
SEX AND GENDER**

Strategic Plan
2018-2023





Excellence of the researcher		<input type="checkbox"/> Exceptional <input type="checkbox"/> Outstanding <input type="checkbox"/> Very Strong <input type="checkbox"/> Strong <input type="checkbox"/> Moderate <input type="checkbox"/> Insufficient	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">  NSERC CRSNG </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> REVIEWER SCORE CARD </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <i>Bio-physicists Medical physicists</i> </div>
<ul style="list-style-type: none"> Knowledge, expertise, and experience of the researcher in the NSE Quality and impact of contributions to the proposed research and/or other areas of research in the NSE Importance of contributions to, and use by, other research and end-users 	<p>Rationale for rating:</p>		
<p>Merit of the proposal</p> <ul style="list-style-type: none"> Originality and innovation Significance and expected contributions to NSE research; potential for policy- and/or technology-related impact Clarity and scope of objectives Clarity and appropriateness of methodology Feasibility Consideration of sex, gender and diversity in the research design, if applicable Extent to which the scope of the proposal addresses all relevant issues Appropriateness of, and justification for, the budget Demonstration that the Discovery Grant proposal is distinct conceptually from research supported (or submitted for support) through CIHR and/or SSHRC Clear explanation why Discovery Grant funding is essential to carry out the research proposed in the DG application (for applicants who hold or have applied for a CIHR Foundation Grant) 	<p>Rationale for rating:</p>		
<p>Contributions to the training of highly qualified personnel</p> <ul style="list-style-type: none"> Past contributions to the training of HQP Training environment HQP awards and research contributions Outcomes and skills gained by HQP Training plan Training philosophy HQP research training plan 	<p>Rationale for rating:</p>		

← **SGBA+ in the research proposal**

← **EDI in the plan**

*NOT – how many girls do you have in the lab!
Explain how EDI is a core value for your training program*

EDI in STEM: Why you want it

**Because you get better science
Because you get better innovation
Because you get better ROI**

**Because you need it to meet funding expectations
(CIHR, NERC, CRCs, CERCs, NIH)**

Because it makes you a better scientist

★ *being aware of bias in all aspects of the scientific endeavour (technical, human, etc) allows us to work towards removing bias while opening more avenues for inquiry, broader questions, more accurate answers & the identification of real excellence*

EDI in STEM: How to get it

Remember this:

★ **Awareness-Education-Actions-Outcomes**

Everyone: Learn, learn about what works and what doesn't, take action based on what works (evidence-based approaches, systems-approaches, individual responsibility – for all) and measure outcomes to see if actions lead to positive change

Nature of action will depend on who and where you are – member of dominant group, trainee, pre-tenure faculty, tenured faculty, academic leader,

Faculty members (look for small, visible changes that will add up):

Departmental level: Collect data. Set targets. Look at external appearance – are you a welcoming department to everyone. Imagery, photos, context, infrastructure?
What about your seminar series – is it diverse? Include talks on EDI, prof development?
Know your rights (tenure clock, leave), learn to self-advocate (POC, URM). Know your institutional policies & requirements re: EDI

Hiring committees: (Dr. Bryan Gaenslers lecture). Be rigorous! Review applications with a deep awareness of implicit bias – TAKE THE HARVARD IMPLICIT BIAS TEST. We are all biased (cf. Dr. Maydianne Andrade). Letters of reference & gendered+ language. "Fit"

Learn to write letters of reference using neutral language.

Teaching: Use diverse examples in teaching, text books, lectures etc. Consider EDI aware curricular offerings. Be aware in class, who is contributing, asking questions, what is the culture of your classroom? Learn to teach inclusively (most LTO offer training)

Research: Lab webpage with EDI statement? Does your department? How do you select research students (e.g. "volunteers"), graduate student surveys re: climate, safety, etc.

Scientific Community: Conference code of conduct, run inclusive conferences, committee representation, awards.



Know yourself

Resource Guide for Canadian Aboriginal Astronomy (May 2010)

Prane Harris, Institute for Integrative Science & Health, Cape Breton University

A highly successful International Year of Astronomy (IYA2009) has come and gone and we are now living the experience of Beyond IYA, with time to process and integrate our understandings of the rich, diverse and multidisciplinary materials available. This Resource Guide has been compiled by Prane Harris as part of the work of the Canadian Aboriginal Working Group for IYA2009. The working group emerged by special request from the Canadian IYA National Steering Committee to Cape Breton University (CBU) because of the university's globally unique Integrative Science program that brings together Indigenous and Western scientific knowledges and ways of knowing and because of the university's dynamic Mi'kmaq College Institute (MCI).



Trainees (find trusted mentors & build your network – socmedia, societies):

Know your rights (TA union, labour law, employment law, human rights, Title IX, etc.)

Know your institutional policies. Pick your supervisor, committee carefully

Engage in (or request) formal bystander training for dealing with micro-, macro-aggressions

Graduate program climate surveys – request or implement, collect data

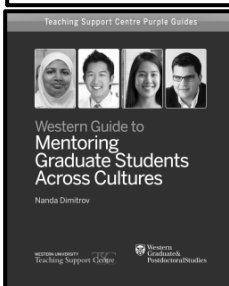
Look for opportunities to advance an EDI agenda collectively (seminar, celebrations, LGBTQ+inSTEM, ALD, etc.

Find champions and sponsors (more impactful than mentors)

Learn to expect & manage pushback and hostility

Document, document, document

Members of dominant group (WM, WW..) – ask your colleagues about their experience. Listen.



Graduate programs can do much towards integration of EDI

Graduate program advisors/directors should be appointed/rewarded on the basis of EDI awareness & advancement of EDI principles (which are usually defined as being institutional priorities too)



Sarah Kaplan, IGE,
Rotman Sch. Business, U of T



© Sarah Kaplan

Diverse Teams Feel Less Comfortable — and That's Why They Perform Better

by David Rock, Heidi Grant, and Jacqui Grey
SEPTEMBER 10, 2014

Harvard Business Review

Discomfort is inevitable. Discomfort is good. Discomfort leads to more innovation. Better outputs (\$\$)

Have to present ideas more clearly, have to clarify concepts more thoroughly (e.g. lab teams w/ members fr. diff. countries)

Embedding equity, delivering on diversity, achieving real inclusion (i.e. using all the talent) means the best outcomes and the best science.

Thank you!








www.ryerson.ca/EDISTEM



March for Science, Toronto, April 14th, 2018

#EDinSTEM CSPC 2017 - EDI in STEM Symposium @RyersonSci

9th Canadian Science Policy Conference
CSPC 2017
Nov. 1 - 3, 2017
Shaw Centre, Ottawa, ON

The next 150 years of Science in Canada: Embedding Equity, Delivering Diversity

Dr. Shobhi Ghose
Founding Director, Centre for Women in Science,
Wilfrid Laurier University

Natasha Goodchild
Research Associate, Waterloo Institute for Social Innovation
and Resilience (WISIR), University of Waterloo


Hilary Lippin-Scott
Senior Pro-Vice-Chancellor, Swansea University

Dr. Mahadeo Sukhal
Head of Research, Canadian National Institute for the Blind

Laur Vigneau
Canada Country Manager & General Manager, Red Hat
Canada

23

Men/women are not a single homogenous group. We all have multiple identifiers, intersections, characteristics = Intersectionalities



Canadian discomfort with discomfort

..... department chair/head answers a question from a candidate for a job in the department about what EDI activities take place in the department

"That's an American thing. We never talk about diversity here. We just get on with it and things work."

Sexual Harassment of Women Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine

June 2018

The National
Academies of

SCIENCES
ENGINEERING
MEDICINE

- male prof (eng) who says he always hires girls in the lab because “they work harder and he can pay them less”
- department chair/head tells hiring committee “Don't just pick the candidate wearing the prettiest dress”
- Young gay man in tech hides his life because of tech-bro' homophobic comments, plus..

EDUCATION September 5, 2018 4:09 pm

Five sexual harassment investigations involving faculty ‘ongoing’ at the University of Manitoba

By Timm Bruch

All the workshops, mentoring programs & science camps, etc. for women/UR groups in STEM will not change participation rates of women and UR groups in STEM unless the culture and workplace also increase accessibility by removing systemic barriers and bringing in accountability and consequences

Evidence-informed, data-driven policy changes that address organizational, institutional, structural & systemic barriers to full EDI in STEM

(Tie to \$\$ to incentivize)

- Data (quan/qual)
- Leading practices (UK, Aus, US)

Leadership, education, intentionality, accountability, courage

Imperial College London

One in four EU workers exposed to second-hand smoke at work

Sustainable energy developer and aerial robot creator recognised in top list

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About

Our History

Our Future

Equality and Diversity

Athena SWAN

Postdoc Development

Home / Faculty of Natural Sciences /

First AS Gold in UK
Dept. Chem - Univ. York
<https://www.york.ac.uk/chemistry/departments/athenaswan/>

Equality and Diversity

Equality and Diversity Committee

The Chemistry Department's Equality and Diversity Committee is a supportive, inclusive and highly motivated staff and student committee, focused on inclusiveness, widening participation, and openness.

WHAT WE DO

Our main responsibilities and remit includes the following:

- raise awareness of equality and diversity issues
- identify obstacles and problem areas
- identify equality and diversity priorities
- take action to address these priorities

- identify equality and diversity priorities
- take action to address these priorities
- monitor the progress of actions taken

COMMITTEE MEMBERS

Professor Sue Gibson (Chair)
 Dr James Wilton-Ely (Director of MRes)
 Professor Michael Bearpark (Disability Officer)
 Dr Nick Brook (UG Teaching Committee Representative)
 Emma Coakley (PG Staff-Student Committee Representative)
 Dr Silvia Diez-Gonzales (Senior Lecturer Representative)
 Tim Jefferson (Operational and Infrastructure Committee Representative)
 Ms Azra Sabadosh (Human Resources)

Gold award = prestigious
RSC – AS award #1 in attracting female candidates (dept. seen as family friendly etc. etc.)

Integration & application of EDI principles in your community

Name it (lexicon of EDI, ask)

Call it out (learn how, workshops, ask for them)

Demand better (#accountability, institutional policies)

Celebrate (+ve context, Soapbox Sci, ALD, IWED, LGBTSTEM etc.)

Communicate (networks, socmedia, societies, listen)

Community (allies, networks, societies)

Copycats (role models, mentors)

Champions (more imp. than role models, sponsors, mentors)

Expect and prepare for pushback & defensiveness

Take individual responsibility – this is on all of us

Awareness – Education – Action - Outcomes

A multitude of nations, languages, cultures, perspectives....



<https://native-land.ca/>

CSPC 2017 - EDI in STEM Symposium

CSPC 2017
June 14 & 15, 2017
Ottawa, Ontario

The next 150 years of Science in Canada: Embedding Equity, Delivering Diversity

Equity, Diversity and Inclusion in Science, Technology, Engineering and Math

★ **Women are not a single homogenous group.**

There are inequities among women based on colour, age, socioeconomic status.....

Intersectionalities

Acknowledge, learn, respect, recognize, celebrate, accommodate. Recognize privilege

★ **Less emphasis on “getting girls interested in STEM”.**
It is not their problem – it is our problem.

We (adults, parents, employers, teachers, society) have responsibility to start creating a world that welcomes everyone, a world that looks like a place where everyone belongs, a world that values all contributions, a world that lets everyone be themselves.

That means that we must get uncomfortable and we must do some hard work. It means employers changing policies. It means leaders being held accountable.

★

Call out gender stereotyping (kids can have all the colours)

Do not buy gendered toys, clothing for kids (gifts).

Look at media, marketing, movies, books, video games, etc.

★

How are women represented? (Hint: you can be a princess and an engineer – not a choice!).

Talk about it with girls and boys.

Raise boys to be feminists.

Teach men to be allies.

Good men must speak up.

★

Have behavioural expectations and hold people accountable.

Educate yourself on gender stereotyping and the harmful effects.

Learn why gender equity is good for men (they might actually live longer and be healthier).

Support girls in their goals to be themselves.

Science is a creative endeavour. Bring your creativity. Build confidence.

Expect bravery, not perfection.

★

Less mentoring, more sponsoring

Building networks, but not expecting women to change

Look at workplace policies (hiring, promotion, leave) – view your workplace, your educational system, your approaches through an EDI lens

Expect and plan for hostility, pushback, discomfort

★