



WISEST

Equity, Diversity and Inclusion (EDI)

Toolkit

www.uab.ca/WISEST



Women in Scholarship, Engineering, Science and Technology

Why EDI is important

Women and gender minorities have long been underrepresented in the STEM fields and many studies have shown that biases, both conscious and unconscious, as well as internal and external forces account for their premature departure from STEM. A study done by Dasgupta in 2017 states “In childhood and adolescence, masculine stereotypes about STEM, parents’ expectations of daughters, peer norms, and lack of fit with personal goals makes girls move away from STEM fields.”

WISEST (Women in Scholarship, Engineering, Science and Technology) exists to promote equity, diversity and inclusion for women and gender minorities in STEM fields. As student populations become more and more diverse, WISEST, along with educators, teachers and parents, can work to empower young women and gender minorities by reducing barriers to equity, diversity and inclusivity in STEM fields.

Goals of the WISEST EDI toolkit

We want this toolkit to:

1. Support teachers, educators and parents in their awareness and education about EDI issues in and out of the classroom as it relates to STEM.
2. Provide tangible strategies, activities and ideas for promoting EDI in and out of the classroom.
3. Further the work of ensuring that girls and gender minorities know that STEM is something they can not only pursue, but also succeed in.

How to use the toolkit

The toolkit is meant to serve as a reference guide for you to access specific types of materials all related to EDI. The resource information includes the type of resource it is (e.g. article, blog post, report, infographic, etc.), a brief summary of what you can expect, and the link to access it. These resources are categorized into topics which include: The Importance of EDI, Teaching Resources, Resources for Supporting Your Diverse Students, and EDI in Action in STEM. The toolkit is meant to be shared easily amongst your networks, so please feel free to distribute.

Note:

We recognize that this list is by no means exhaustive, however, the resources have been curated by the WISEST staff for their accessibility and value. We are constantly finding new resources and our hope for this toolkit is that we will release an updated version annually in August and January.

If you know of a resource that could be added to the toolkit, share it with us at wisest.outreach@ualberta.ca.

For more information about WISEST, visit our [website](#).

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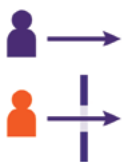
The Importance of Equity, Diversity and Inclusion (EDI)

EDI Defined



Equity

Removing barriers, biases, and obstacles that impede equal access and opportunity to succeed.



Diversity

Ensuring the presence of difference, be it race, gender, socioeconomic status, sexual orientation, religion, ethnicity, mental or physical abilities, etc..



Inclusion

Creating an environment that makes people feel safe and valued for who they are and recognizes the contributions of everyone.

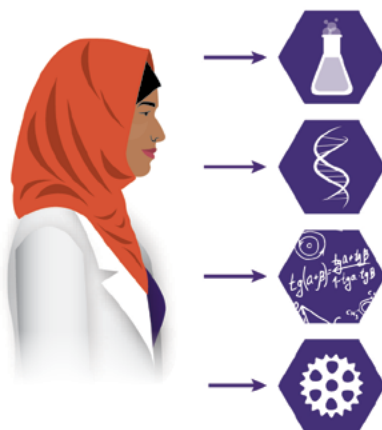


EDI in STEM

Creates opportunities for everyone to find their fit



Provides access to careers



Allows us to ask better questions



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"The likelihood of a girl enrolled in grade 1 in Canada going on to receive a PhD in the sciences or engineering is approximately 1 in 225." - WISE report 2017

"Teams with a minimum of 2-3 (ideally diverse) women decrease groupthink."

The Importance of EDI: Resources

This section provides background information about underrepresentation in STEM fields, including government and organization reports and research with supporting figures. In addition to the data and statistics, there are also reports on the research investigating the cause for underrepresentation and some background on why moving towards a more inclusive field is valuable and necessary.

NSERC Women in Science and Engineering Report 2017

nserc-crsng.gc.ca/_doc/Reports-Rapports/WISE2017_e.pdf | Government Report

This NSERC (Natural Sciences and Engineering Research Council of Canada) report provides data on the numbers of women in STEM and examines potential variables that lead to the issue of underrepresentation.

Belonging: A Conversation about Equity, Diversity, and Inclusion

medium.com/@krysburnette/its-2019-and-we-are-still-talking-about-equity-diversity-and-inclusion-dd00c9a66113 | Article

This article introduces commonly used terminology relating to EDI and breaks down the importance of each component of EDI as they relate to one another.

Tony Ruth's Equity Series

subjectguides.library.american.edu/c.php?g=1025915&p=7715533 | Visual Graphics

A popular visual depicting the differences between inequality, equality, equity and justice.

Keeping Doors Open- Girl Guides Report on Girls in STEM

www.girlguides.ca/WEB/Documents/GGC/Girl_Research/Keeping_Doors_Open/Keeping_Doors_Open_Full_Report.pdf | Report

Report that examines the underrepresentation of girls in STEM and the pipeline that feeds STEM careers.

Dissecting the Science of Equity, Diversity and Inclusion in STEM

education-forum.ca/2018/11/16/dissecting-the-science-of-equity-diversity-and-inclusion-in-stem/ | Article with tips

Written by the founder of STEMneutral, this article summarizes the leaky pipeline issue of STEM fields and proposes ways to combat it.

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Closing the Engineering Gender Gap

design-engineering.com/features/engineering-gender-gap/ | Article

This article discusses the high school to career pipeline and discuss critical points where women and girls begin opting out of engineering.

You're Biased and You Don't Even Know It

visual.ly/community/Infographics/education/youre-biased-you-dont-even-know-it | Infographic

An infographic that presents the idea of unconscious bias and its implications.

Standing up to Gender Bias in STEM

en.ccunesco.ca/-/media/Files/Unesco/Resources/2020/02/ConfrontingBiasInSTEM.pdf | Infographic

This resource is for exploring gender equity in STEM with students or colleagues. A list of discussion questions is provided to stimulate small-group discussions.

Why and (How) STEM Curriculum Needs to be LGBT Inclusive

glsen.org/blog/why-and-how-stem-curriculum-needs-be-lgbt-inclusive | Blog Post

A personal reflection provided by a bisexual genderqueer person about the importance of seeing themselves represented in STEM.

Educational Exclusion: Drop Out, Push Out, and the School-to-Prison Pipeline

glsen.org/research/educational-exclusion-drop-out-push-out-school-prison-pipeline | Report

This resource provides insight into the conditions that push LGBTQ youth out of school and sometimes even into the criminal justice system.

The Problem of Colonial Science

scientificamerican.com/article/the-problem-of-colonial-science/ | Article

This article discusses the importance of making science more inclusive and local to be more sustainable and effective.

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Historical Comparison of Gender Inequality in Scientific Careers Across Countries and Disciplines

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7060730/> | Peer-Reviewed Paper

This paper discusses the gender inequality in academia despite the increase of women academics in the past 60 years.

The STEM Gap: Women and Girls in Science, Technology, Engineering, and Math

aauw.org/resources/research/the-stem-gap/ | Report

This report breaks down the STEM gap and provides comprehensive resources with accompanying statistics from studies conducted to capture the disparity.

The Gender/Resource Gap

insidehighered.com/news/2012/12/13/study-suggests-resource-inequities-may-impact-publishing-records-women-science | Article

This article discusses the gender gap in research and how women are less likely to receive financial support from the universities, which makes them less likely to publish research.

3 Reasons Gender Diversity is Crucial to Science

elsevier.com/connect/3-reasons-gender-diversity-is-crucial-to-science | Article

This article breaks down the reasons why gender diversity is so important in the science discipline.

A Gender Analysis of the Occupational Pathways of STEM Graduates in Canada

150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2019017-eng.htm | Government Report

This resource reports, from a gender perspective, the career paths that STEM graduates tend to pursue after graduation.

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Blacks, Latinos feel unwelcome in STEM careers. And that's a big problem for our economy.

[usatoday.com/story/opinion/2020/07/28/why-women-minorities-still-feel-excluded-stem-careers-column/5516913002/](https://www.usatoday.com/story/opinion/2020/07/28/why-women-minorities-still-feel-excluded-stem-careers-column/5516913002/) | Opinion Article

This article discusses how African Americans and Latino individuals working in STEM feel less accepted in their roles and tend to be less likely to stay in their fields.

How Gender Equality in STEM Education Leads to Economic Growth

eige.europa.eu/gender-mainstreaming/policy-areas/economic-and-financial-affairs/economic-benefits-gender-equality/stem | Statistical Report

This resource uses GDP (Gross Domestic Product) and employment data to show how closing the gender gap is beneficial for the economy.

Bridging the Gender Gap: Why Do So Few Girls Study STEM Subjects?

www.theguardian.com/science/head-quarters/2018/mar/08/bridging-the-gender-gap-why-do-so-few-girls-study-stem-subjects | Article

This article explains the different reasons for a persistent gender gap and lists possible solutions to bridge this gap.

Male LGBTQ Students More Likely to Leave STEM Majors Than Their Heterosexual Peers: Study

www.the-scientist.com/the-nutshell/male-lgbq-students-more-likely-to-leave-stem-majors-than-their-heterosexual-peers-study-29949 | Article

This article highlights research that male LGBTQ students are more likely to stop pursuing STEM majors, while female LGBTQ students show the opposite trend.

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Teaching Resources: Tips and Advice

Advice, lessons, and activities to promote and encourage Equity, Diversity and Inclusion.

Teaching Tolerance

www.tolerance.org/classroom-resources | Resources

This website provides a variety of EDI resources such as film kits, lesson plans, student tasks and teaching strategies to help teachers incorporate EDI into their classrooms.

Top Picks for Diversity, Equity and Inclusivity Resources for Classrooms

www.common sense.org/education/top-picks/diversity-equity-and-inclusivity-resources-for-classrooms | Resource List

This list includes a variety of resources that can be used to promote more diverse perspectives in the classroom.

How to Promote Equality & Diversity in the Classroom

www.highspeedtraining.co.uk/hub/classroom-equality-diversity/ | Idea list

This resource provides ideas and suggestions for building diversity recognition into classroom life.

Cultivating Diversity, Equity, and Inclusion in Education Environments

resilienteducator.com/collections/cultivating-diversity-inclusion-equity/ | Resource List

A resource list that helps educators promote and celebrate diversity and inclusivity in the classroom. The resources provided center around teaching styles, diversity activities, inclusive teaching and creating an equitable learning environment.

The Role of Education In Advancing a Diversity and Inclusion Breakthrough: Linking Education to the Workforce of the Future

www.huffpost.com/entry/the-role-of-education-in-advancing-a-diversity-and_b_5a556ad1e4b0baa6abf16267 | Article

This article outlines the importance of having inclusive school practices and provides tangible practices that schools can implement.

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4 Practices to Promote Equity in the Classroom

www.northeastern.edu/graduate/blog/equity-in-the-classroom/ | Article

This article discusses four practices that educators can adopt to promote a more equitable classroom.

Classroom Diversity: Tips for Teachers on How to Foster Inclusivity

www.oise.utoronto.ca/oise/About_OISE/Dealing_with_diversity_in_the_classroom.html | Tip Sheet

Tip sheet on fostering an inclusive environment in the classroom.

Getting started: Diversity and Identity Tool Kit-TELUS

ccdi.ca/media/1587/toolkit-1-getting-started-diversity-and-identity.pdf | Toolkit

A comprehensive toolkit that includes classroom and extracurricular programming material that encourage high school students to value and embrace diversity and inclusion.

Diversity , Equity, and Inclusion Educational Resources

www.ans.org/communities/diversity/resources/ | Resource List

This list provides a variety of resources for educators on EDI-related topics (e.g. resources to address unconscious bias, anti-racist toolkits, allyship resources, and how to talk with young children about race).

Making STEM Education More Welcoming to Underrepresented Minorities

www.the-scientist.com/careers/making-stem-education-more-welcoming-to-underrepresented-minorities-65910 | Article

This article provides tangible ways in which instructors can create a more inclusive learning environment for underrepresented minorities in their classrooms.

Seven Principles for a Gender-Inclusive Learning Environment

www.thegist.edu.au/schools/create-an-inspiring-stem-environment/seven-principles-for-a-gender-inclusive-learning-environment/ | Tips List

This article contains quick tips for science teachers on how to make their lessons more inclusive.

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Implicit Association Test

implicit.harvard.edu/implicit/canada/takeatest.html | Online Assessment

This online implicit/unconscious bias assessment will provide some insight into your own unconscious biases.

Challenging Ableist Language

www.glsen.org/activity/challenging-ableist-language | Lesson Plan

Lesson plan that discusses ableism and challenges the casual use of ableist language in writing pieces.

Diversity Activities for Youths and Adults

www.uh.edu/cdi/diversity_education/resources/_files/_activities/diversity-activities-for-youth-and-adults.pdf | Activity Ideas

A series of diversity and inclusion activities that encourage EDI discussions. This resource also provides advice on facilitating these activities to effectively promote EDI.

5 Game-changing Diversity and Inclusion Activities for Teams

officevibe.com/blog/diversity-and-inclusion-activities | Activity Ideas

An introduction to the importance of building an inclusive workplace. This resource also includes tips for leaders in how they can build an inclusive workplace.

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EDI in Action in STEM

Here are examples of scientists and educators implementing EDI strategies in their teaching or lab practices. We have also included information about labs who are challenging the norms of scientific research and are implementing intersectional, anti-colonial, feminist, and queer science practices and philosophies.

Recycling is Like a Band-Aid on Gangrene- Guts Documentary

www.theatlantic.com/video/index/591640/recycling-plastics/ | Documentary

This short documentary provides a look at how an anti-colonial, feminist science lab operates. The practices are relational, land based and the research seeks to bring active environmental and social change.

Civic Laboratory for Environmental Action Research

civiclaboratory.nl/ | Lab Website

The CLEAR lab is a feminist, anticolonial lab specializing in monitoring plastic pollution. The lab website details how science is done differently.

van Anders Lab- Social Neuroendocrinology

www.queensu.ca/psychology/van-anders-lab/ | Lab Website

The van Anders lab, based at Queen's University in Kingston, Ontario has built their practices on feminist and queer science philosophies.

InclusiveSTEM

willisglycobiologylab.com/inclusivestem/ | Framework and Lecture

This framework has been developed by Dr. Lisa Willis at the University of Alberta to promote inclusivity in STEM. See also, Dr. Willis's lab code of conduct that was co-constructed by the lab team.

Glass Obstacle Course: Why so few Women Hold Top STEM Spots

www.cbc.ca/radio/quirks/sep-21-2019-women-in-science-special-how-science-has-done-women-wrong-1.5291077/glass-obstacle-course-why-so-few-women-hold-top-stem-spots-1.5291082 | Radio Interview

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An interview on CBC's Quirks and Quarks with the U of A's Dr. Lisa Willis, discussing EDI in STEM and the barriers women face.

Messing Up Mating: Queer, Feminist Engagements with Animal Behavioural Science.

www.tandfonline.com/doi/abs/10.1080/00497878.2019.1603987?sroll=top&needAccess=true&journalCode=gwst20 | Peer-Reviewed Paper

This paper examines how animal behaviour science perpetuates heterosexual, anthropomorphic narratives, and attempts to re-think them. The research method used could be used in classrooms to identify ways the language biology texts use reinforce these narratives.

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Resources for Supporting your Diverse Students

We have compiled a list of resources and classroom books to consider for supporting Black, Indigenous, and People of Colour (BIPOC) students in your classroom or organization.

How to Support Students of Color

community.chronicle.com/news/1683-how-to-support-students-of-color | Article

This article discusses ways in which you can support and be allies to your students of colour.

Indigenous Awareness Canada

indigenousawarenesscanada.com/ | Online Training

Online courses on Indigenous awareness training. Courses must be purchased for access.

The World Leader in Indigenous Awareness Training

www.theconsciouskid.org/antiracist-childrens-books | Book List

Curated by The Conscious Kid, this list provides information about anti-racist books written for children. These books encourage parents and educators to begin teaching anti-racism at a young age.

The Conscious Kid

www.theconsciouskid.org/black-authors | Book List

This is a list of children's books written by Black authors.

Antiracist Baby

www.amazon.ca/AntiRacist-Baby-Ibram-X-Kendi/dp/0593110412 | Book

Written by Ibram X. Kendi, the author to the popular book How to be an Antiracist, this board book for babies provides language for critical conversations about antiracism.

Antiracist Toolkit

cfs-fcee.ca/wp-content/uploads/2019/07/Anti-Racism-Toolkit-Final-1.pdf | Toolkit

Developed by the Canadian Federation of Students, this detailed resource to help post-secondary students promote anti-racist work on college campuses.

Incorporating Anti Racism Into Your Teaching Practice or Workshop

www.manoconojo.com/blog/2020/6/13/incorporating-anti-racism-into-your-teaching-practice-or-workshops | Article

Tips on how to raise the visibility of Black, Indigenous, and People of Colour (BIPOC) artists in your curriculum.

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Teaching While White

teachingwhilewhite.org/blog | Blog

A blog dedicated to amplifying the work of Black, Indigenous and People of Colour (BIPOC) while supporting white educators to work towards lasting change in their classrooms and schools.

I Thought I Knew What School Was Like For My Students of Colour

www.weareteachers.com/anti-racist-teaching/ | Article with resources

The author shares their experience as a teacher becoming aware of how their own teaching practices unintentionally cause harm to students and how they are now using it to provide perspective on ways we can do better.

10 Ways Well-Meaning White Teachers Bring Racism Into Our Schools

everydayfeminism.com/2015/08/10-ways-well-meaning-white-teachers-bring-racism-into-our-schools/ | Tips list with alternative actions

This list outlines ways in which educators may inadvertently perpetuate racism and suggests steps that they can take to promote appropriate EDI practices instead.

Underrepresentation of Visible Minorities in STEM: Finding New Solutions

diversitycan.com/Articles.aspx?type=tops&id=Uderreresetatio-of-visible-Miorities-i-STEM-Fidig-ew-Solutios-2876 | Article

This article discusses barriers that racialized students face in STEM and how students can be supported.

STEM by the Numbers

www.tolerance.org/classroom-resources/tolerance-lessons/stem-by-the-numbers | Lesson

This lesson plan can be used to educate students about the barriers faced by underrepresented groups in STEM.

Making Science Relevant to Indigenous Students

www.ictinc.ca/blog/making-science-relevant-to-indigenous-students | Article

This article highlights ways in which we can include Indigenous knowledge in science curriculum.

Guide for Minority Students In STEM

www.discoverdatascience.org/resources/minority-stem-guide/ | Guide

This guide provides resources on how to support racialized students (e.g. clubs, diverse curriculum, faculty representation, campus culture, scholarships) at the college level.

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Additional Resources

This section includes resources that don't quite fit into the other categories, but still provide value information for how we understand and promote EDI in STEM.

Science Still Bears the Fingerprints of Colonialism

www.smithsonianmag.com/science-nature/science-bears-fingerprints-colonialism-180968709/ | Article

This article delves into the colonial history of science and the call to reframe and re-construct science in a way that accommodates non-western frameworks.

Responses to 10 Common Criticisms of Anti-Racism Action in STEM

drive.google.com/file/d/1AoFbaCEfP5qgBMjKnpsnzx5idYPdbq6x/view | Document

The document breaks down common criticisms of anti-racism actions in STEM by providing concrete examples, relevant statistics, and a historical approach to racism in STEM.

How LGBT+ Scientists Would Like to be Included and Welcomed in STEM Workplaces

www.nature.com/articles/d41586-020-02949-3 | Article

This article features six LGBTQ+ scientists sharing their experiences of discrimination in their fields and how universities can be more inclusive.

7 Promising STEM Gender-Gap Solutions

www.gettingsmart.com/2018/02/7-stem-gender-gap-solutions-that-appear-to-be-working/ | Article

This article discusses different ways to promote involvement of women in STEM.

How (And Why) To Improve Gender Balance In STEM Workplaces

www.forbes.com/sites/kimcassidy/2019/03/08/how-and-why-to-improve-gender-balance-in-stem-workplaces/?sh=7bf7658dbba0 | Article

This article explains how employers can support the success of women in STEM.

Elevating the LGBTQ Presence in Science and Research

sunnybrook.ca/research/media/item.asp?c=2&i=1910&f=elevating-lgbtq-presence-science | Article

This article discusses the importance of supporting LGBTQ+ STEM professionals and how creating a sense of community and inclusion is crucial.

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