DISCUSSING DIVERSITY, EQUITY, AND INCLUSION (EDI) IN STEM

RESOURCES FOR EDUCATORS

These resources were designed to support exploration of concepts related to social issues like gender discrimination and societal change in relation to science, technology, engineering, and math (STEM).

Like many other fields, STEM fields have long experienced a lack of diversity – notably, diversity can mean different things to different people, like diversity of ideas or attitudes. However, most often diversity is discussed in relation to demographic diversity, which refers to how people identify with various groups, for example one’s race, gender, religion, or ethnicity.

We encourage you to lead discussions and activities that relate to equity, diversity, and inclusivity (EDI). It is important to remember in such discussions that all students may start with a different understanding of social issues. While all students may have unique experiences and perspectives because of their own social identities, it is essential to conduct discussions with mutual respect, compassion, and dignity for all.

GRADE LEVEL

Discussions can be modified for different grade level. Given the content involves people, attitudes, and some more sensitive topics related to social equity or discrimination, educators should consider what is appropriate for discussion among their specific classes. You will find adaptations and resources for the following grades:

<table>
<thead>
<tr>
<th>Grades 4-6</th>
<th>Grades 6-8</th>
<th>Grades 9+</th>
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This resource was developed through a collaboration between Ingenium and the Laurier Centre for Women in Science.
THE POSTERS

This series of posters profile women in different STEM fields. These posters can be used to spark discussion and engagement around topics related to inclusivity in STEM, given the persistent and historical underrepresentation of women and marginalized people historically in these domains.

Each example serves as a reminder that when we discuss women (or any other particular social group) we are not discussing a homogenous group, but rather a collection of individuals with diverse life experiences. As the posters demonstrate, women across different ages, cultures and disciplines participate and succeed in STEM. Some example lesson plans and recommended posters are included in this document, and the posters are also linked to more general guiding questions and potential discussion topics across grade levels.

USING DISCUSSION AS A TEACHING TOOL

Class discussion is an approach to teaching in which either guided or spontaneous dialogue is used to communicate information and achieve learning objectives1. Research shows that discussion-based teaching helps students develop skills to benefit them in future education and work, including critical thinking skills2, communication, collaboration, and understanding others’ perspectives3, and greater problem-solving abilities4. Cultivating these global competencies will benefit students across disciplines and grade levels.

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1 Jahng, 2012
2 Pederson, 1992
3 Sibold, 2016a, 2016b, Steiner et al, 2013
4 Chiang et al, 2013
KINDS OF DISCUSSION-BASED APPROACHES

Experts identify several approaches to discussion-based learning, including structured controversy\(^5\), deliberative discussions or debates\(^6\), and problem-based discussions in which students generate solutions to challenges\(^7\).

This resource provides examples of each of these different styles within lesson plans so that educators can experiment with implementing a variety of discussion-based teaching techniques.

CONSIDERATIONS FOR USING DISCUSSION-BASED APPROACHES AND TEACHING

1. Group composition: Who is in the group? In what ways is the group demographically similar or different? How are groups formed?
2. Educator bias: How will educators remain neutral in debates or conflicting dialogue? How might bias toward one perspective impact the discussion?
3. Controversial opinions: How will educators respond to discussions that involve conflict? How can students engage in safe discussions while still learning about diverse perspectives and critical thinking?
4. Evaluating outcomes: How will educators determine the success of discussions in learning outcomes? How will outcomes be evaluated? How can educators understand and account for individual differences like personality in participation differences?

\(^5\) Bull, 2007  
\(^6\) Goodin & Stein, 2008  
\(^7\) Bradshaw, 2011
# GLOSSARY OF TERMS

Here is some useful terminology to review with students

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
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<tbody>
<tr>
<td>Ageism</td>
<td>Prejudice or discrimination based on a person's age.</td>
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<tr>
<td>Ableism</td>
<td>Prejudice or discrimination based on a person's abilities.</td>
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<tr>
<td>Bias</td>
<td>Prejudiced attitudes or actions against a person or group because of their demographic variables.</td>
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<tr>
<td>Discrimination</td>
<td>Prejudiced attitudes, actions, or treatment based on a person's demographic variables.</td>
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<tr>
<td>Diversity</td>
<td>The inclusion of different social groups, including different genders, races, ethnicities, religions, sexual orientations and identities, or socio-economic statuses etc.</td>
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<tr>
<td>Empathy</td>
<td>The ability to think about and understand the perspective and feelings of another person.</td>
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<tr>
<td>Equity</td>
<td>The quality of being fair or impartial; freedom from bias or favouritism. People get what they require to meet their needs.</td>
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<tr>
<td>Equality</td>
<td>The quality or state of being equal or the same. People receive equal treatment, regardless of their needs.</td>
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<tr>
<td>Explicit attitudes</td>
<td>A person’s outward attitudes that they hold consciously.</td>
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<tr>
<td>Gender</td>
<td>The set of behavioral, cultural, or psychological traits typically associated with one sex (e.g., men, women, trans, non-binary).</td>
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<tr>
<td>Inclusive</td>
<td>That which is broad in scope and includes all people, regardless of demographic or other factors.</td>
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<tr>
<td>Implicit attitudes</td>
<td>A person’s attitudes that exist beyond their conscious awareness.</td>
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<tr>
<td>Intersectionality</td>
<td>The intertwined and additive way in which multiple forms of discrimination (e.g., racism, sexism) combine or intersect to create complex experiences, especially of underrepresented groups.</td>
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<tr>
<td>Racism</td>
<td>Prejudice or discrimination based on a person’s race.</td>
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<tr>
<td>Sex</td>
<td>The biologically-determined categories based on reproductive organs and structures (e.g., male, female, intersex).</td>
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<tr>
<td>Sexism</td>
<td>Prejudice or discrimination based on a person’s sex or gender.</td>
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<tr>
<td>Social Location</td>
<td>Where a person 'comes from' in society; the social identities or groups with which they might identify (e.g., gender, ethnicity, nationality).</td>
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<tr>
<td>Stereotypes</td>
<td>Overgeneralizations of a group of people that are often associated with negative qualities.</td>
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<td>Tokenism</td>
<td>The practice of acting only to prevent criticism and create the appearance of equity (e.g., hiring or promoting a person who belongs to a minority group to make it seem like the environment is diverse or fair).</td>
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Note. In Canada, there are four designated groups identified under the Employment Equity Act: Women, people with disabilities, Aboriginal peoples, and visible minorities.
REFERENCES


Moss- Science faculty’s subtle gender biases favor male students. Proceedings of the National Academy of Sciences, 109(41), 16474-16479.


