Women and girls in science

Topic

Gender equality and discrimination, careers in science

Learning outcomes

- Use vocabulary related to gender equality and discrimination
- Use vocabulary related to working in science
- Identify the gist and specific information in an article about women and girls in science
- Discuss ways to encourage girls and women to study and work in the fields of science, technology, engineering and mathematics

Age and level

13-17, Adults (B1+)

Time

Approximately 80-90 minutes

Materials

- Presentation OR student worksheet
- Video: https://www.youtube.com/watch?v=iuJ1zp-QT8o
- Task 6 Reading texts

Introduction

In this lesson, students read an article about some of the reasons why there are fewer girls and women interested in working in science, technology, engineering and mathematics (STEM) and what's happening to encourage equality in these fields. Students will evaluate different ways of doing this,

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including a video produced by the EU to encourage girls and women to study and work in the field of science. There are optional extension tasks at the end of the lesson.

Teachers can use a student worksheet or presentation for this lesson (for a low-printing option). They will need copies of reading texts for Task 6.

Procedure

Lead-in
(10 mins)
	• Tell your students to think about school. Ask them to write down the subjects they like(d) best and least.
	• Tell them to compare their lists in pairs / small groups and to explain what they like(d) / dislike(d) about the subjects.
	• Show **slide 2** of the presentation or write these questions on the board:
	  ○ Some people believe that you are either an 'Arts' person or a 'Science' person. Which subjects would you associate with those categories?
	  ○ Is this statement true for you?
	  ○ Why do you think people have this idea?
	• Ask students to discuss the questions in pairs / small groups. After a few minutes, get feedback from some pairs / groups.

Task 1: Introduction to reading text **(10 mins)**	• Write STEM on the board. Explain that it is an acronym. Can students guess which school subjects are represented by these letters? (Answer: Science, Technology, Engineering, Maths) • Ask students: Do you think more men or women work in these fields? (Less than 35% of graduates in STEM subjects worldwide are women and there are even fewer in engineering and information technology) • Explain that in 2016, the UN declared 11 February as International Day of Women and Girls in Science. Ask students: Why do you think the UN did this? • Show **slide 3** of the presentation or refer students to **Task 1** in the student worksheet. Explain this is the first paragraph of an article about women and girls in science. • Tell students to read the article and to find why the UN declared 11 February as International Day of Women and Girls in Science (to

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	encourage more girls and women to take up jobs in STEM). • You may like to point out that there is no difference in ability between boys and girls in STEM subjects!
Task 2: Pre-reading vocabulary (10 mins)	• Explain that students will read the rest of the article during the lesson. Explain that they will do an activity to review vocabulary before they read the article. • Show **slide 4** of the presentation or refer students to **Task 2** in the student worksheet. • Individually or in pairs, students match the vocabulary with the definitions. Check the answers with the whole class. Check that everyone knows how to pronounce new words. Answers: 1e, 2c, 3f, 4h, 5b, 6g, 7a, 8d
Task 3: Reading for gist and discussion (10 mins)	• Before students read the next parts of the article, ask them to discuss these questions as a whole class or in pairs / small groups: 1. Why is it important to involve more women and girls in science? 2. Why aren't more girls taking up careers in STEM subjects? • Show **slide 5** and **slide 6** of the presentation or refer students to **Task 3** in the student worksheet. • Ask students to read the text to check if any of their ideas are mentioned. If using the slides, give students some time to read slide 5 before moving onto the next slide. • Get feedback for questions 1 and 2. Students could also add their thoughts. 1.Why it's important to involve women: it brings fresh points of view, new talent and creativity; it helps to increase women's social and financial position in some countries. 2. Possible reasons why more girls aren't taking up careers: girls have less experience of toys that encourage an interest in science; girls are more critical of themselves; they have more study choices; they fear being in a minority and experiencing discrimination.
Task 4: Reading to check ideas (10-15 mins)	• Ask students to brainstorm ideas to answer this question: What can be done to encourage girls to take up science as a career? They can do this as a whole class or in pairs / small groups. They should think of the areas

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	discussed in the article i.e. early years; making choices at school; entering the world of work. • Show **slide 7** and **slide 8** of the presentation or refer them to **Task 4** in the student worksheet. Students read the rest of the article to see which ideas are mentioned. • Get feedback from students and list the ideas on the board. You could add some of the students' ideas to the list. (Ideas: giving girls toys which help them to build things and explore science; inviting women scientists / older students to give talks at school; university and lab visits for hands-on experience; mentor programmes for women working in STEM-related jobs; role models in the news and media.) • If you have time, put students into pairs or small groups. They rank the ideas according to how effective they think they would be.
Task 5: Video (15 mins)	• Tell students that they are going to watch a video made by the EU to encourage women and girls to study and work in science. • Show **slide 9** of the presentation or refer students to **Task 5** in the student worksheet. • Tell students to read the list and decide which of the things they would expect to see in the video. They should tick (or note down) what they think they will see. Before they do the task, check that students understand all the items. • Show the video: https://www.youtube.com/watch?v=iuJ1zp-QT8o As students watch, they should underline / note down the things in the list that they see in the video. • After watching the video, students compare their answers. Show the video again if necessary. Check the answers with the class: Everything is included in the video apart from i. science textbooks; j. pictures of famous scientists; k. a laboratory; m. statistics about women in science. • Ask students to discuss their reactions to the video. They can do this in pairs, small groups or as a whole class. Use these questions to guide the discussion (also available on **slide 10**): ○ What is your opinion of the video?

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	○ How effective do you think it might be in encouraging girls and women to take up science? Why? ○ What is the slogan? How effective is it? **Alternative:** Instead of providing the list of things in the video, ask students to predict what will be in the video and write a list on the board. Students then watch the video and compare their ideas.
Task 6: Information gap (15-20 mins)	**Before the lesson:** Make copies of **Task 6 Reading texts**. You will need enough copies of each text for half the class. • Tell students that they are going to find out about an alternative approach to encouraging women and girls to study and work in science. • Divide students into two groups: Group A and Group B. Give each student in Group A a copy of the**Student A text**; give each student in Group B a copy of the **Student B text**. • Ask students to read their text quickly. Then ask them to focus on the missing information. Explain that they will ask another student questions to find out the missing information. They should write the questions they will need. Monitor and help here with question formation. **Answers:** Student A questions: 1. What did she study after school? 2. What is she researching at the moment? 3. Why has she criticised some campaigns designed to encourage girls to take up science? Student B questions: 1. What has she used Wikipedia for? 2. What percentage of biographies on Wikipedia are about women? 3. How many Wikipedia entries did she write last year? 4. What was she included in in December 2018? • When students have the questions, regroup them into pairs. Each pair must have one student from Group A and one student from Group B. In pairs, students ask and answer their questions and complete the text. • Ask students what they think about this approach to encouraging women into science - how effective might it be?
8. Optional extras:	• As an optional class (or homework) extension task, students could do some research into some successful female scientists, using Jessica's Wikipedia biographies as a starting point. Students can then give a mini presentation /

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Suggestions for extension tasks	report on their scientist in the next class. • Alternatively, students could work in groups to come up with their own campaign ideas and slogan for encouraging women to take up science. This could take the form of a poster or video campaign for example. For more about setting up group projects, see: http://www.teachingenglish.org.uk/article/project-work-teenagers • Another alternative would be to ask students to write a proposal to a school board outlining their ideas for promoting STEM studies and careers to women and girls. For more about writing proposals see: https://learnenglish.britishcouncil.org/writing-purpose/proposals

Adapted from a lesson contributed by

Rachael Roberts

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