CITIZENSHIP

Who does the algorithm think I am?

By **Media What**

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Lesson Overview_

Online we can virtually find any information we want. We ask search engines for answers to all of our questions, we like photos on social media platforms because they are suggested to us, or because our friends have liked them. All the information we have at our fingertips can be empowering, but how exactly do platforms know what information is most relevant to us? This lesson plan is focused on understanding algorithms, and the role they play in curating our information diets online. Through structured online search activities, students will interrogate the algorithmic biases embedded while retrieving information, and question the personalization of search results. Finally, they will engage with a tool that allows them to take a peek into how different search algorithms see images — of others, or even of themselves.

This lesson was developed as part of the POWER project (Portraits Of Women's Empowered Representations), which was funded by the US Embassy Cyprus. We would also like to thank the Cyprus Center for Algorithmic Transparency for allowing us to integrate their tool in our lesson.

Lesson Objectives_

- To understand algorithms' role in our daily online lives
- To examine how algorithms operate
- To interrogate algorithmic biases
- To question what we know and don't know about how algorithms function
- To reflect on the ethical dimensions of algorithms
- To develop a critical mindset while retrieving information online

Learning Outcomes_

By the end of this lesson, students will be able to:

- Think critically while searching for information and navigating social media
- Understand what algorithms are and the role they play on digital media platforms
- Question media and information ranking and labeling when conducting online searches
- Recognize the presence of algorithmic biases
- Design their own online search inquiries to critically examine how algorithms work

Vocabulary_

Algorithm = the logic applied by a computer system, which is essentially a set of rules on how to solve a problem.

Algorithmic bias = when the logic applied by computer systems results in repeated, unfair errors that benefit something/one over something/one else.

Artificial intelligence = computing systems programmed to think like humans.

Machine learning = algorithms that improve automatically based on the data we generate and the ways we use technology.

Personalization = computing systems making suggestions that are unique to the individual user.

Tagging = adding a label to an object, which can help categorize it.

Lesson Outline_

SLIDES	Lesson Plan Instructions	Duration
BEGIN by going over what this lesson will cover (Slides 2-3). Each section is broken down so students have a mental map of the goals of the lesson.		
What is an algorithm? [Duration: 12']		
#4	ASK students to individually write down the instructions to make a burger. Alternatively, this can be done by taking suggestions from the whole class, and jotting down the instructions on the board. Note It's important that you prompt students to write the instructions in the right order, and to take everything into consideration (e.g. setting out a plate, halving the bun). Specific instructions will help illustrate the point better. After the instruction list is completed: PROMPT students to consider special circumstances: e.g. What if the person is vegetarian? What if they are allergic to gluten? What if they hate tomatoes? Do we need some additional extra instructions for some exceptions?	7'
#5	SAY making a burger is a one example of a simple algorithm we have in our everyday life. Give the definition of the algorithm provided on the slide and point out that sometimes, algorithms create these sets of instructions to make sure tasks are completed, but they also	5'

	need to take into consideration possible exceptions, (conditional cases) to complete tasks, just like we did with the burger.	
How do algorithms work online? [Duration: 38']		
#7	SHOW each of the illustrations and elicit students' answers by helping them make the connection with online tasks that people are routinely involved in online. *Answer: a) searching for information online; b) shopping online; c) viewing a social media feed* ASK students to think about how algorithms may help carry out these different tasks online. To spend less time on this slide, you can choose the online task that students are more familiar with or show more interest in. *Possible answers*: Students' answers are likely to indirectly include personalization, for instance that on social media, the computer knows who I am and shows me posts by my friends, or when shopping online, it knows me if I am logged in, or it recommends similar things that I might like. The connection to personalization might be information search task might require more prompting.	8'
#8-9	EXPLAIN the term artificial intelligence (AI). PROMPT students to find what the three photos have in common. *Note to teacher*: The connection is that all three images are of people who don't exist. They are created through AI, and one way to spot this is that all three images have the same eye alignment. Students can explore more on the site (see resources below), which provides a new face with every page refresh.	7'
#10-11	EXPLAIN in order to categorize images, computers process images by adding specific tags to them. This makes it easier for the computer to understand if the image is of a man or a woman, or of a child or an adult. ASK students to form pairs and to select a photo that includes a person and to manually make a list of adjectives and nouns that describe what appears in the photo. The next step is to upload the photo on the Open Tag software (see resources) in order to examine how artificial intelligence tags the same image. DISCUSS students findings, by focusing on discrepancies, or words used by AI that are not so clear or relevant. Are any words inappropriate / inaccurate / biased? *Note to teacher:* The image(s) can be preselected by teachers, or students can even use their own images for this exercise. It should be noted that this is a research tool developed for educational purposes.	13'

#12-14	DESCRIBE the two examples that illustrate how algorithms can make serious mistakes that result in bias. The first example relates to Facebook, and the automated prompt below a video of a black man that asks “Keep seeing videos of primates?”. The second image relates to Google, and the “gorilla” tag on black people; to fix this problem, Google just removed the “gorilla” tag. This illustrates the complexity of fixing faulty algorithms. EXPLAIN the term “algorithmic bias”. ASK students to examine whether this bias exists for certain professions as well. Students can use their phones to do this activity, which might also present different results. This will provide a good transition into the next section, which concerns personalization.	10’
Does the algorithm know me? [Duration: 30’]		
#16-19	ASK students to consider whether they think that the technologies we use provide us with personal suggestions. Ask for specific examples that can illustrate this point. EXPLAIN the term machine learning, and then connect it back to the initial example of making a burger. An algorithm is a set of instructions on how to perform a given task (e.g. we created a set of instructions for making a burger); artificial intelligence automates this process (e.g. think of it like an assistant who makes the burgers for us based on the instructions we’ve given them); machine learning adapts the algorithm based on the feedback it received (e.g. if we keep removing the tomato when we get a burger, it will learn that we don’t want tomato in our burger anymore, and will make us tomato-less burgers!). LINK the example with the burger with the term “personalization”.	7’
#20-21	PROMPT students to consider ways in which we can better understand algorithms, when they lack transparency. EXPLAIN that being mindful of our online behaviors and monitoring the type of content we are provided with online can lead to a better understanding of how an algorithm sees us. Emphasize the importance of reflection in this process, but also the value of inquiry.	12’
Your turn: Design your own algorithm investigation [Duration: 15’]		
#23	PROMPT students to conduct their own independent investigation using a platform of their choice. This can either be an in-class 5’ presentation, or a short report.	15’

Tools for this lesson:

1. AI-generated images of people: http://thispersondoesnotexist.com/
2. Open Tag software: https://bit.ly/3Ffpl0V

Additional Resources_

Coded Bias [Film] on Netflix
IMDB: https://www.imdb.com/title/tt11394170/

"Why algorithms can be racist and sexist?" by Rebecca Weil on Vox [Article]
https://www.vox.com/recode/2020/2/18/21121286/algorithms-bias-discrimination-facial-recognition-transparency

Algorithmic Justice League [non-profit]
https://www.ajl.org

Algorithms of Oppression: How Search Engines Reinforce Racism, by Safiya Noble [Book]

Weapons of Math Destruction, by Cathy O'Neill [Book]

Race After Technology, by Ruha Benjamin [Book]

On the Media: Biased Algorithms, Biased World [Podcast episode]
https://www.wnycstudios.org/podcasts/otm/segments/biased-algorithms-biased-world

TED Radio Hour: Joy Buolamwini: How Do Biased Algorithms Damage Marginalized Communities? [Podcast episode]
https://www.npr.org/transcripts/929204946?t=1640332340917

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