

Activity 3.1.2 - Main societal challenges and risks in the use of AI

Estimated duration	40 minutes
Requirements	Modules 1 and 2. Activity 3.1.1. If done in-presence, moderately large open space where students can discuss and present in groups
Hardware and Software tools used	Remote: Software - Video-conferencing software. Real time online collaboration text editor and presentation software. Hardware - Desktop/laptop computer
Type of assessment	Assessment is based on the understanding of the issues discussed in class displayed through the representation of arguments highlighting the negative impact of AI, and through critical discussions that question those arguments.

The objective of this activity is to facilitate the understanding of how the use of AI technologies can have a negative impact on the real world through the representation of supporting arguments and examples. Comments and questions challenging these arguments will also be encouraged and explored.

Procedure (steps)

Anticipatory Set

- Teachers can remind students of an artificial intelligence system previously studied (e.g. chatbots, digital assistants, search engines, image recognition such as face tracking). The teachers again refer to the SDGs introduced in the previous activity to explain that the use of AI can also have opposite effects and move us away from achieving those goals. Teachers introduce some examples to explain this point, like: according to a study by the European Parliament, about 14% of jobs in OECD countries are automatable (people can be replaced by machines). Another 32% would have to face substantial changes (people have to re-train themselves on their jobs); this would increase poverty.
- The case of algorithm biases. The teacher explains that human beings sometimes make decisions assisted by algorithms (a set of actions or steps required to solve a problem); these decisions, therefore, are partly automatic. Computer recommendations may have an air of rationality or infallibility and people may follow them blindly. However, depending on how it has been 'trained' to work and on the

information that humans give the PC for this (see machine learning), the algorithm can then suggest 'discriminatory' decisions, i.e. favouring certain types of people over others. This is what is called “AI bias” (bias = a distortion of the decision making process based on a prejudice).

- The teacher makes an example: based on a customer assessment made automatically by an algorithm, a bank employee can decide whether a customer can apply for a loan from that bank or not. If the algorithm relies on data from a time when no women were eligible to apply for a loan from the bank, it may give an indication that the best customers to give a loan to are men. This results in discrimination - i.e. unequal treatment - of women. So it works against the SDGs 5 (Gender Equality).
- The teacher explains that other possible issues are: privacy issues in using facial recognition algorithms in public places, or security and privacy issues in using systems that elaborate voice and sounds like digital assistants. Other examples include difficulties of voice recognition algorithms in accurately identifying commands from voices from older adults or younger users because the algorithms are trained on middle-aged adult population. Image recognition software or image based search engines can present biased results (see <https://en.unesco.org/artificial-intelligence/ethics/cases#biasedai>)

Direct Instruction

- Teachers divide students in groups.
- Each group of students discusses one example of negative implications or risks caused by AI applications in the real world.
- Each group thinks about the possible implications of that example in other areas/on other key issues

Guided Practice and Understanding

- Each group, using the material provided by the teacher, devises a way to represent the example they are discussing to highlight the ways in which AI technologies create risks and have a negative impact on the issue at stake, and thus the arguments against that application. Each student might represent an aspect, agent or functionality of the entire system.

Independent Practice

- The students in each group play out the representation of the AI application example and of the arguments against its use for the whole class.

Closing

- The rest of the class challenge the arguments against the use of AI in that particular area through critical comments and questions. Teachers moderate the discussion and clear any misrepresentations or doubts other students might have.

Troubleshooting

Possible issue	Possible solution
The AI examples of applications of AI in the real world systems are unclear to the students, or students can not relate the concepts they learned previously with the applications of AI systems they are trying to explain.	Assurance from the teacher and re-explanation of high-level concepts if needed.
Students unwilling to physically play out an application of AI technologies in the real world.	Partnering with a drama teacher and making the enacting part of the lesson in a more appropriate environment, such as a school theatre or a large space.
Students unwilling to challenge the examples and arguments presented by one group	Teacher asks questions that encourage critical debate on specific application of AI

Resources for teachers

Resources that can be used in class for introducing examples of AI applications and the ethical dimension

Title	Description	Link	Languages
Ethics & AI: Privacy & the Future of Work	Video that explains how ethics and privacy are connected in AI and how AI may influence future jobs.	https://www.youtube.com/watch?v=zNxw5gJtHLC https://youtu.be/PVDguCvRwEs?list=PLIz0pQKPcu89NB4AdYYuixHPnN_2QocuZ	ENGLISH with Autogenerated subtitles ENGLISH with GREEK subtitles
Ethics & AI: Equal Access and Algorithmic Bias	Video describing the potential for AI to help society with a focus on ethics, access and fairness	https://www.youtube.com/watch?v=tJQSyzBUAew https://www.youtube.com/watch?v=yUSj9VsM82U&list=PLIz0pQKPcu89NB4AdYYuixHPnN_2QocuZ&index=6	ENGLISH with Autogenerated subtitles ENGLISH with GREEK subtitles

ως λειτουργεί η Τεχνητή Νοημοσύνη - Τεχνητή Νοημοσύνη: Δεδομένα και Μεροληψία	A short video that explains how training data in AI and bias are connected	https://www.youtube.com/watch?v=7a2aNF-dRo8&list=PLIz0pQKPcu89NB4AdYYuixHPnN_2QocuZ&index=3	ENGLISH with GREEK subtitles
What's Going On With Facial Recognition?	A short video that explains how face recognition can be used to help society or can be used against privacy of people	https://youtu.be/BqQT4slOYA0	ENGLISH with Autogenerated subtitles
ИЗКУСТВЕНИЯТ интелект и ЗАЩО Илон МЪСК се обърна срещу себе си?	Video about AI and Elon Musk, including other examples of AI applications	https://www.youtube.com/watch?v=wFPp2IEQPog	BULGARIAN
Algoritmo e pregiudizio	Video on how prejudices and human stereotypes can influence algorithms	https://www.raiscuola.rai.it/tecnologia/articoli/2021/05/Paola-Velardi-a-Maestri-d557376c-fe22-41e8-880f-a09413aec33c.html	ITALIAN
Dove nascono le Idee: la Sicurezza Intelligente	Video on applications of AI for security	https://www.leonardocompany.com/it/news-and-stories-detail/-/detail/the-intelligent-security	ITALIAN

Negative impact of AI / risks posed by AI resources:

Algorithm bias

- [Amazon scraps secret AI recruiting tool that showed bias against women](#)
- [Google will pay \\$2.6 million to workers over claims its hiring and pay practices were biased against women and Asians](#)
- [Algorithm-driven Hiring Tools & Disability Discrimination](#)
- [Wired. "Machines Taught by Photos Learn a Sexist View of Women: Algorithms showed a tendency to associate women with shopping and men with shooting"](#)

Privacy issues

- [Centre for Democracy and Technology, Student privacy protection Training Module](#)
- Save the Children (2020). Digital Safeguarding For Migrating And Displaced Children: An overview of the current context and trends, potential risks and practical next steps. https://resourcecentre.savethechildren.net/node/18477/pdf/mdi_digital_final_rgb_rev_091220.pdf

- <https://blog.torproject.org/reaching-people-where-they-are>
Tor Project's mission is to further the popular understanding of privacy technologies → trainings in the Global South

Surveillance

- BBC File on 4 Podcast (2020). "Facial recognition is being rolled out across Britain. But is it a vital tool against crime - or a threat to the innocent?"
<https://www.bbc.co.uk/programmes/m000dpkt>
- Use of facial recognition in schools:
<https://www.biometricupdate.com/201910/french-privacy-regulator-finds-facial-recognition-gates-in-schools-illegal>
<https://www.politico.eu/article/french-privacy-watchdog-says-facial-recognition-trial-in-high-schools-is-illegal-privacy/>
(see also Automating Society Report 2020)
- There are two pilot projects in Sweden which focus their attention on the use of AI and facial students' recognition for administrative purposes allowing teachers to devote their time to teaching
<https://www.electronicsspecifier.com/products/artificial-intelligence/facial-recognition-tested-in-swedish-high-school>
- Structural and cognitive change of schools and schooling, see Andrejevic and Selwyn, Facial Recognition technology in schools: critical questions and concerns,
<https://www.tandfonline.com/doi/full/10.1080/17439884.2020.1686014>
- European Parliament recent moratorium on using facial recognition for law-enforcement purposes:
<https://www.europarl.europa.eu/news/en/press-room/20210930IPR13925/use-of-artificial-intelligence-by-the-police-meps-oppose-mass-surveillance>

Environmental and economic repercussions of AI-based systems

- BBC The Documentary Podcast (2019). "Will AI kill development? Will robotisation prevent poorer countries taking the traditional route to prosperity?"
<https://www.bbc.co.uk/programmes/p075nqyy>
- Sahota, Neil. "Beyond AI: The Need For Solutionists In Creating A Sustainable World". Forbes. 24 April 2019.
<https://www.forbes.com/sites/cognitiveworld/2019/04/24/beyond-a-i-the-need-for-solutionists-in-creating-a-sustainable-world/>
- Jones, Phil. "Refugees help power machine learning advances at Microsoft, Facebook, and Amazon". Restofworld. 22 September 2021.
<https://restofworld.org/2021/refugees-machine-learning-big-tech/>
- Why we should care about the environmental impact of AI
<https://www.forbes.com/sites/forbestechcouncil/2020/08/17/why-we-should-care-about-the-environmental-impact-of-ai/?sh=766825ef56ee>