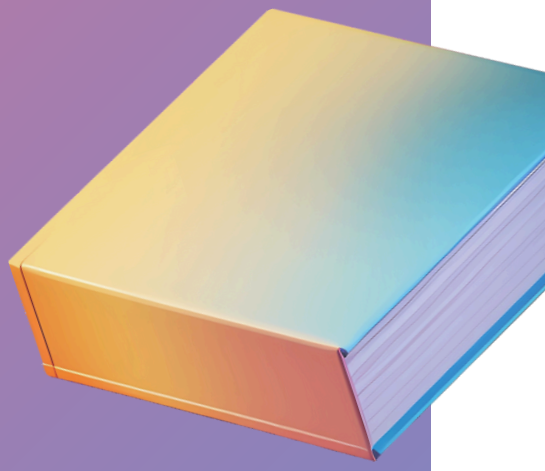
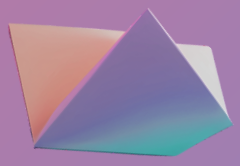
AI for Children

Artificial Intelligence Curriculum for Elementary and Secondary Schools

Social Studies II

Microtargeting and Dark Posting





https://kurikulum.aidetem.cz/en

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Form for comments

npi National Pedagogical Institute of the Czech Republic

We create methodologies in cooperation with the National Pedagogical Institute.

Microtargeting and Dark Posting

A few words to begin

Dear Teacher,

You are receiving a teacher material developed to support the teaching of artificial intelligence at the elementary and secondary school levels. This particular lesson focuses on microtargeting and dark posting – tools that enable the delivery of sponsored content to specific audiences on social media. It builds on the previous guide Media Literacy I: Recommendation Systems on Social Media and expands the topic using the real-world case of data misuse by Cambridge Analytica in 2016.
Thank you for your willingness, energy, and courage to introduce students to these more complex topics!

– AI for Children team

30 min

Overview of the Topic

Recommendation Systems (RS) have been using machine learning – a method of artificial intelligence – to suggest content on social media and beyond for nearly a decade. While RS undoubtedly offer many benefits, they can also be misused for propaganda purposes, which is the focus of this lesson. We've done our best to explain everything clearly in the teacher preparation section.

Lesson presentation in PDF

Editable presentation in Canva

Lesson Overview

Recommended Age, Lesson Length
Children aged 13–15, 45 minutes.

Building Blocks
Microtargeting, darkposting

What Are the Students Learning?
Content recommendation through microtargeting (not only via dark posting) can be misused for propaganda purposes.
The interests and values of the advertiser may differ significantly from those of the content's recipient.

Why Are They Learning This?
By understanding how microtargeting and dark posting work, students learn to critically evaluate the content recommended to them on social media.

How Do We Know They Have Learned It?
They explain the terms microtargeting and dark posting.
They provide a concrete example of the misuse of microtargeting and dark posting.

Tools
Teacher: projection equipment and presentation slides, worksheet
Students: writing utensils, optionally a mobile phone with internet access

Five Big Ideas
5-A-III Ethical AI (Practicing Ethical Design).
5-B-I AI & Culture (AI in Daily Life).
5-B-II AI & Culture (Trust and Responsibility).

Digital Competence
Facilitating Learners' Digital Competence.

Bloom's Taxonomy
Remembering: Students will become familiar with terms such as microtargeting, dark posting, and the OCEAN model.
Understanding: They will explain how microtargeting and dark posting work and how they are used on social media.
Analysis: They will analyze the ethical and social impacts of microtargeting and dark posting, especially in relation to propaganda.

Note: Gender equality is key for AI for children, but for brevity we use masculine formulations in our methodologies.

Glossary of terms

Artificial Intelligence (AI)
There is no universally accepted definition of artificial intelligence. However, most descriptions agree that it refers to a system capable of simulating human thought and actions.
AI typically takes the form of a computer program designed to solve tasks that once required significant human intellect and were considered uniquely human.
AI is also a scientific field that emerged in the first half of the 20th century. It seeks not only to understand intelligent systems but primarily to create them.
nd intelligent systems, but especially to create them.

Recommendation Systems (RS)
(Recommendation systems are a type of machine learning technology. They are based on tracking user behavior, analyzing it, and then suggesting relevant content.
For example, if you watch a video of kittens on YouTube, the platform will likely suggest more similar videos.
Or, if the system notices that you (User A) behave similarly to User B – for instance, both of you watch videos with kittens and seals – it may recommend videos that User B enjoys, even if you haven't watched anything similar yet.
Recommendation systems analyze our behavior in two main ways. Let's take the example of rating a movie.
An explicit signal is when you rate the movie with stars.
An implicit signal is based on your actions – for example, whether you watched the movie to the end, or even watched it more than once.
Recommendation systems are widely used to suggest content on social media platforms, streaming services, and in search engines.

Big Data
Big data refers to large and diverse datasets in many different formats, varying in size and structure. These can include images, videos, audio recordings, texts, or so-called digital footprints – data about user behavior.
Big data has emerged as a result of the rapid growth of the internet, where much of the content is now created by users themselves.
Its rise is also driven by the development of IoT (Internet of Things) technologies, which can collect data from a wide range of sources.
Another factor is the significant drop in the cost of storing and processing data. There is typically so much data that traditional methods are no longer sufficient – modern approaches rely on using large numbers of computers and their storage capacities. This is also true for current machine learning techniques.

Machine Learning (ML)
Just like humans can learn from examples and experience, so can machines created by humans.
Machines learn using a method called machine learning, which allows AI systems to move beyond being just a collection of pre-programmed actions – they can come up with new solutions on their own.
The goal of machine learning methods is to identify patterns hidden in large volumes of data.

User Behavior
User behavior in the online environment encompasses all activities performed by individuals on the internet. It has evolved alongside the development of the web itself.
The first user platform was so-called Web 1.0, which was characterized by passive content consumption. Users had very limited opportunities to create content of their own, as websites were produced by a small number of content creators.
A major shift came with the emergence of Web 2.0, a term commonly used since around 2004. Its defining feature is the active participation of users in content creation.
This transformation led to an enormous increase in the volume of data – a valuable resource for training artificial intelligence systems. The internet is now gradually transitioning into Web 3.0, associated with concepts such as cloud services, the Internet of Things (IoT), and the semantic web.

The OCEAN model
The OCEAN model (also known as the Big Five) is widely used in psychology and personality research. It describes a spectrum of human behavior and personality traits across five core dimensions: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.
These dimensions provide a comprehensive overview of an individual's unique psychological profile and help predict various aspects of their behavior and interpersonal relationships. The model is applied in numerous fields, including psychological research, personnel assessment, and marketing, to gain a deeper understanding of human nature.

Basic orientation in the topic

What does Facebook know about us?
youtu.be/JAO_3EvD3DY

What data do we leave behind on social media?
Some digital data we share consciously while using social media – other data is collected without us even realizing it.

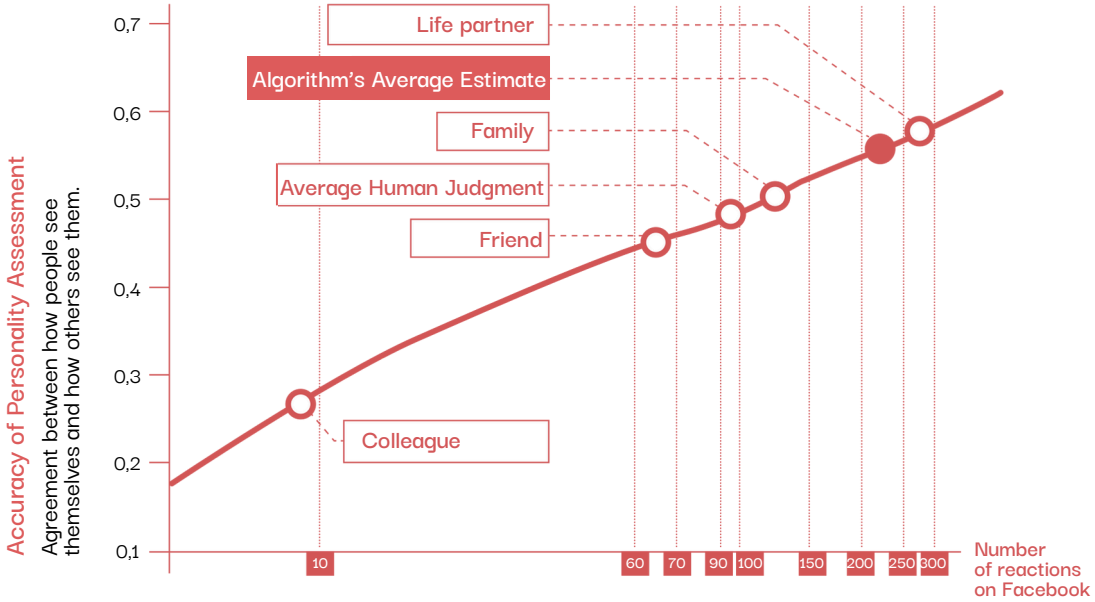
Examples of user data:

1. Information we share ourselves: our name, age, email address, phone number, posts, videos, photos...
2. Activity data: what we search for (search history), how long and what we watch, who we follow... our habits – when and how often we access a social network...
1. Interactions: likes, shares, duets, saves to favorites, comments...
2. Device information: data about the device used to access the internet (or app), such as browser type and version, operating system, IP address, location, and more.

We recommend watching the 3-minute video What Facebook Knows About Us.

How well do algorithms know us?
Michal Kosinski's 2015 study Computer-based personality judgments are more accurate than those made by humans compares how accurately human personality can be assessed by people versus algorithms, based on several criteria. The study found that algorithms analyzing a person's digital footprint can judge personality more accurately than their friends, acquaintances – or even close family. According to the findings, personality traits can be predicted automatically, without relying on human social-cognitive skills.

The following graph illustrates how the accuracy of personality assessment increases with the number of Facebook likes analyzed:



Source: The Accuracy of Algorithmic Personality Judgments

Recommendation systems
Recommendation systems are a form of machine learning technology – a method of artificial intelligence. They work by observing user behavior, analyzing it, and suggesting content that matches the user's preferences. These systems are widely used to recommend content on social media platforms, streaming services, and search engines (see the glossary on the previous page).

What is microtargeting?
Microtargeting is a strategy that enables tailored communication based on the recipient's personality, interests, values, preferences, or current circumstances. Messaging that is personalized in this way tends to be significantly more effective than broad, general communication aimed at larger groups or the public as a whole. Microtargeting is commonly used in product and service advertising, as well as in political campaigns.

What does dark posting enable?
A dark post is a commonly used type of advertisement on social media that does not appear on a page's public timeline. Instead, it is shown only to users it specifically targets. Advertisers can use dark posts to tailor both content and format based on various characteristics of the intended audience (such as age, gender, location, etc.). Since dark posts remain hidden from the advertiser's public page, it's possible to create a large number of them without cluttering the visible feed. That said, all ads–both current and historical–can be viewed through the Ads Library.

Data analytics as used by Cambridge Analytica
To help illustrate the topic, this guide references a well-documented case of data misuse during the 2016 U.S. presidential election, where candidates Hillary Clinton and Donald Trump competed for the presidency.

By that time, data analysis and microtargeting were already standard practices in political campaigning. What Cambridge Analytica (CA) introduced, however, was a novel approach: crafting and targeting manipulative content based on specific personality types–going beyond the usual targeting based on region, preferences, or demographic attributes.

Cambridge Analytica
youtu.be /mrnXv-g4yKU

In short: How did they do it?
In 2014, researcher Aleksandr Kogan developed a Facebook-linked app called This Is Your Digital Life. It was a personality quiz with around 100 questions, designed to generate an OCEAN personality profile. Users who took the quiz also consented to the app accessing not just their own data, but also data from all their Facebook friends. As a result, the app ended up collecting data on nearly a quarter of the U.S. population (those with Facebook accounts). This process is well explained in this short video.

Combining quiz results with behavioral data (such as Facebook interactions), Kogan was able to fairly accurately predict what kind of messages–and in what form–would resonate with which users. He later sold this data to Cambridge Analytica, which used it during the 2016 U.S. presidential campaign.

Delivering content through microtargeting
Once CA had developed these predictive models, it used them to create persuasive messages in formats optimized for specific personality types.
The company reportedly produced hundreds of thousands of unique pieces of content, delivered to users through microtargeting–specifically via dark posts (as explained earlier). This effort became known as the Defeat Crooked Hillary campaign.

The emotional core of the strategy
Cambridge Analytica's executive Mark Turnbull explained (here) in a recorded conversation with undercover Channel 4 News reporters posing as potential clients what he believed to be the key to the company's success:
"It's no good fighting an election campaign on the facts because actually it's all about emotion. The big mistake that political parties make is they attempt to win the argument rather than locating the emotional centre of the concern and speaking directly to that." A similar dynamic is depicted in the film Brexit, which we recommend watching.

Engage

10 min

Chain (recall)

Where do we see or hear advertisements?
On TV, in print, on the radio, in cinemas before the movie starts, on the internet, on posters, billboards, cars... we get calls from telemarketing centers, see them on promotional items...

On which social networks do you see sponsored content (ads)? Give one specific example.

Who pays for sponsored content and why?
Companies, public institutions, political parties, non-profits, or even individuals. The purpose is often to sell products, promote a brand, shape public opinion, enter a new market, raise awareness... or for political campaigning.

Think & discuss

Do you think everyone sees the same ads?
We see different ads thanks to recommendation systems that track user behavior and suggest different content to different users based on that.

Understand

25 min

Activity 1

Students get to know the OCEAN model and create their own.
Students work in pairs, and each pair receives Worksheet 1, which includes an explanation of the OCEAN model and follow-up activities. The OCEAN model–also known as the Big Five–is widely used in psychology and personality research. It describes a spectrum of human behavior and personality traits. Researcher Aleksandr Kogan and the company Cambridge Analytica (CA) used the OCEAN model in the context of microtargeting during the 2016 U.S. presidential election. These models enabled highly precise delivery of messages tailored to different voter profiles.
See the introductory section of this material for more context.

10 min

Worksheet 1

Presentation slide 02–03

In pairs, students first read the characteristics of the OCEAN model, then mark their own traits.
Using a scale of 1–10, each student evaluates themselves and their partner across the five personality traits. They transfer the results into a pentagon-shaped diagram. Afterward, they exchange and compare their models, reflecting on how they see themselves and how they perceive each other.

5 min

Share

How different is your view of yourself compared to how your classmate sees you?
Optional follow-up: What surprised you the most?

Presentation slide 04

OCEAN Models and Cambridge Analytica
Show students the documentary by The New York Times about the major data misuse case involving Cambridge Analytica between 2014 and 2016.

Cambridge Analytica
youtu.be /mrnXv-g4yKU

You can share the questions below with students before watching the video. They will look for the answers while watching.

7 min

Discuss

The video explains how the data of a large number of users was misused.
What kind of data was involved?
It involved data from a quiz created by researcher Aleksandr Kogan. The results were used to build psychometric (OCEAN) profiles of users. Combined with data on user behavior, this provided highly detailed insights into individual users. The data also included behavioral information about the users' Facebook friends who had not taken the quiz themselves.

Do you remember how many users were affected by the data breach?
87 million users – nearly one-quarter of Facebook users in the U.S.

How did Cambridge Analytica obtain the data?
In 2014, researcher Aleksandr Kogan created a Facebook-linked app called This Is Your Digital Life. It was a personality quiz with around 100 questions, designed to generate an OCEAN profile.
Users who took the quiz also consented to the app accessing their personal data as well as the data of all their Facebook friends.

What was the data used for?
Combined with behavioral data (likes on Facebook and more), this information was used by Cambridge Analytica for microtargeting in the 2016 U.S. presidential election, in which Donald Trump was elected president.

Reflection

10 min

Clarify the topic of the lesson with the students.
What is microtargeting? What is darkposting?

Pros & cons

Divide students into groups of four – each pair in the group should come up with at least one positive and one negative aspect of dark posting. Each group will later present their views in a class discussion.

List at least one pro and one con of dark posting.
Pro: A brand can test the effectiveness of its campaigns (useful for brand performance, A/B testing).
Con: Sponsored content is only seen by the individual it targets. This can be problematic if the content is misleading or manipulative.

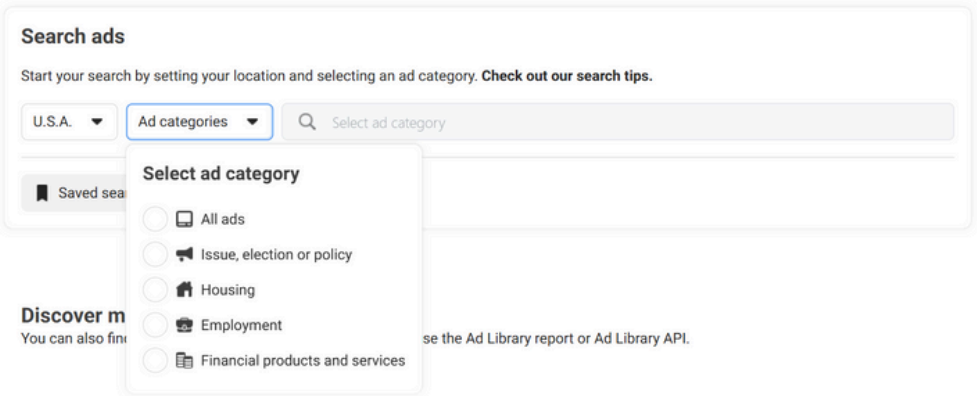
Discuss

How can we protect ourselves from similar misuse, like in the case of Cambridge Analytica?
- Be cautious and think critically about the information you consume or share on social media and other online platforms.
- Regularly check and update your privacy settings on platforms and apps.
- When using free apps or services, pay attention to the permissions you grant during installation and usage.

More to explore

Presentation slide 06

Students can view ongoing ad campaigns based on ad type and keyword.
Go to Meta's Ad Library at: facebook.com/ads/library,select the region, ad category, and enter a keyword. You do not need a Facebook account to search for ads.



Activity

If possible, project a social media feed for students to see. Alternatively, students can browse their own feeds on their smartphones. Their task is to identify either clearly sponsored posts or posts that contain hidden advertising. They can then guess who might have paid for the content and why.

For each post you see on social media, think about why it was shown to you, whether it might be manipulative, and try to find out who paid for it. Sometimes it's enough for a political party or even a local developer to sponsor an influencer you follow in order to shape your opinions.

OCEAN model (The Big Five)

The OCEAN model (often referred to as the Big Five) is widely used in psychology and personality research. It describes a spectrum of human behavior and personality traits. You'll create your own profile using this model. On a scale from 1 to 10, try to evaluate your own personality traits as well as those of a classmate. Your classmate will do the same for you. Then, transfer your results into a pentagon-shaped diagram. Once finished, exchange your diagrams and compare how you see yourself and how others perceive you.

O

Openness to experience

This trait describes curiosity, creativity, and imagination. People who score high tend to be more adventurous, open to new experiences, and eager to learn.

C

Conscientiousness

This relates to how careful, organized, and responsible a person is. Individuals with high scores are usually reliable, structured, and thorough.

E

Extraversion

This measures how outgoing, energetic, and sociable a person is. Extraverts tend to be more active and seek out the company of others.

A

Agreeableness

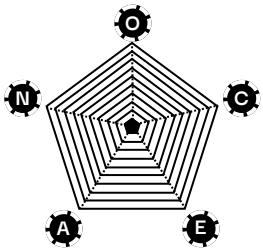
This describes how kind, friendly, cooperative, and empathetic a person is. Those with high scores are usually considerate and try to avoid conflict.

N

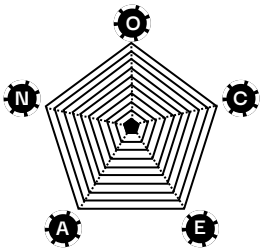
Neuroticism

This describes how people react to stress and emotional challenges. Individuals with high scores are more likely to experience intense emotions such as anxiety, sadness, or anger.

Your name



Friend's name



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