Immune 2 Infodemic Teacher Package

DISINFORMATION
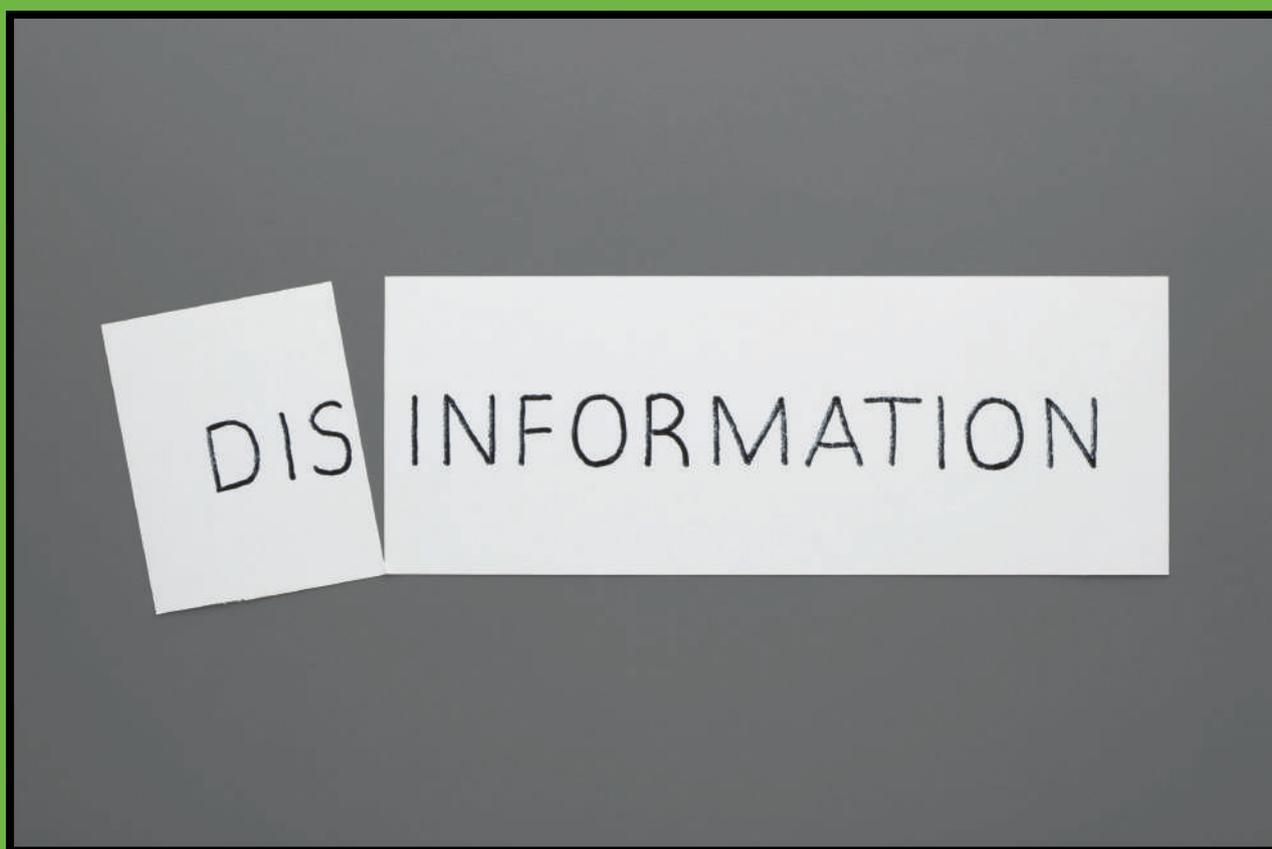
IMMUNE 2
INFODEMIC

I2I Project & e-learning

In Europe and worldwide, disinformation and misinformation are undermining the quality of public debate, eroding democratic participation and limiting political engagement of youth in particular.

The IMMUNE 2 INFODEMIC project addresses these challenges by developing a preventive approach that immunises citizens against information manipulation. Since its launch in 2022, the project – led by Beyond the Horizon ISSG (Belgium) in collaboration with FaktaBaari (Finland), Dare to be Grey (Netherlands) and Januam (Germany) – directly involved more than 2,250 learners and indirectly reached over 110,000 people through public events and digital outreach in five EU Member States.

Our training focuses on three core competencies (vaccines) – digital literacy, media literacy and critical thinking – complemented by six topics (boosters): elections, health, migration, climate, FIMI (foreign information manipulation and interference) and AI.

You can find our e-learning at:

https://academy.behorizon.org/pages/immune2infodemic

This e-learning is developed by

BEYOND THE HORIZON · DARE TO BE GREY · JANUAM · FaktaBaari · Funded by the European Union

Why is this important?

A classroom is a safe and controlled environment where students can practice and get to understand online disinformation patterns, and how this links with the media that they consume on a daily basis

- Resistance to misinformation, but also to polarisation
- Increased democratic resilience and ability to participate in informed civic life and debate
- Emotional wellbeing and less likely to be influenced by emotional appeals or 'rage bait'
- Digital safety and future of students will increasingly use digital tools and AI and it is important to know the basics of these AI technologies and the risks associated with them
- Emotional literacy: Today, with digital platforms and social media being so prevalent, how information FEELS matters just as much (if not more) than how factual it is, because the impact is still relevant for individuals - Emotional aspect of information is just as important as the factual aspect of information
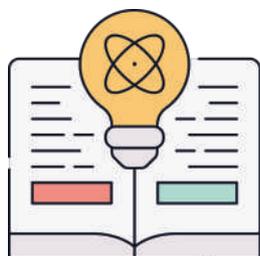
Inoculation theory

To effectively counter disinformation, a pre-emptive approach should be taken. This includes boosting students immunity to false and misleading information through inoculation
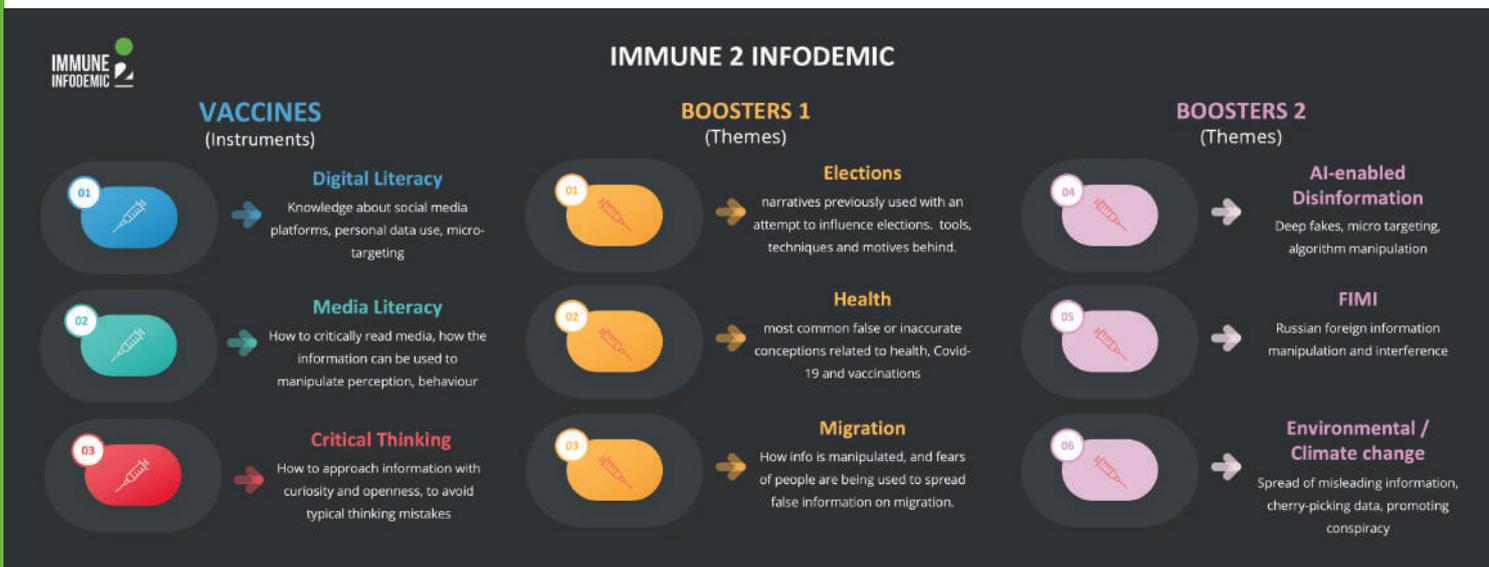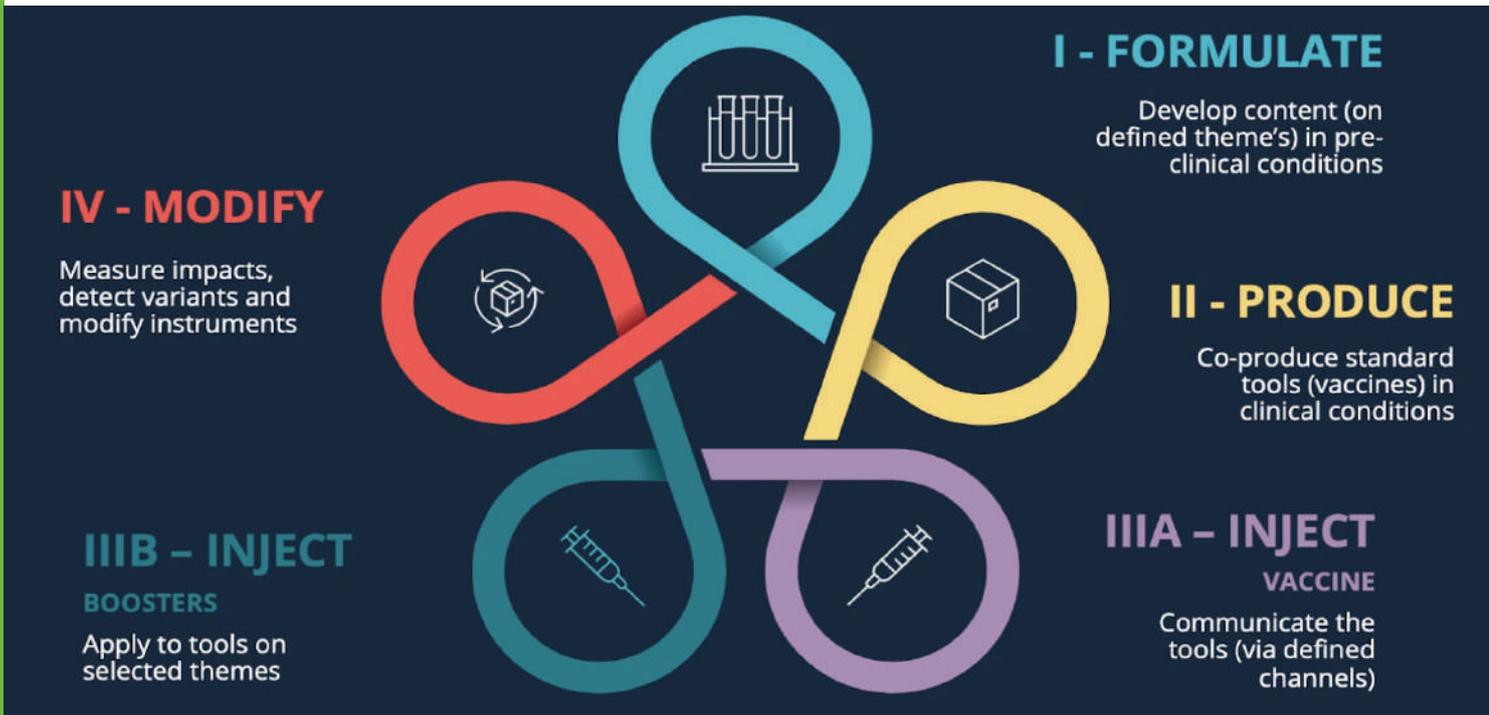
Inoculation theory: By exposing learners to small and controlled examples of misinformation in a safe classroom setting, students "immune system" recognises disinformation when they see it online and they are able to better resist it.

Here, disinformation is a 'virus' with immunisation through education being the 'vaccine' to disinformation.

Instead of waiting until students encounter harmful content and then reacting emotionally and believing it, education should focus on pre-emptive immunisation for students. Here using the tools (CT, ML, DL) are useful to help students counter disinformation when they see it in their daily life.

Methodology

I - FORMULATE

Develop content (on defined theme's) in pre-clinical conditions

II - PRODUCE

Co-produce standard tools (vaccines) in clinical conditions

IIIA – INJECT

VACCINE

Communicate the tools (via defined channels)

IIIB – INJECT

BOOSTERS

Apply to tools on selected themes

IV - MODIFY

Measure impacts, detect variants and modify instruments

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VACCINES
(Instruments)

01 **Digital Literacy**
Knowledge about social media platforms, personal data use, micro-targeting

02 **Media Literacy**
How to critically read media, how the information can be used to manipulate perception, behaviour

03 **Critical Thinking**
How to approach information with curiosity and openness, to avoid typical thinking mistakes

BOOSTERS 1
(Themes)

01 **Elections**
narratives previously used with an attempt to influence elections. tools, techniques and motives behind.

02 **Health**
most common false or inaccurate conceptions related to health, Covid-19 and vaccinations

03 **Migration**
How info is manipulated, and fears of people are being used to spread false information on migration.

BOOSTERS 2
(Themes)

04 **AI-enabled Disinformation**
Deep fakes, micro targeting, algorithm manipulation

05 **FIMI**
Russian foreign information manipulation and interference

06 **Environmental / Climate change**
Spread of misleading information, cherry-picking data, promoting conspiracy

This package will provide you with materials to (1) help **you** understand disinformation, (2) teach **students** about it (3) illustrate **why** is it harmful, and (4) how to counter it in daily life

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What is mis- and disinformation?
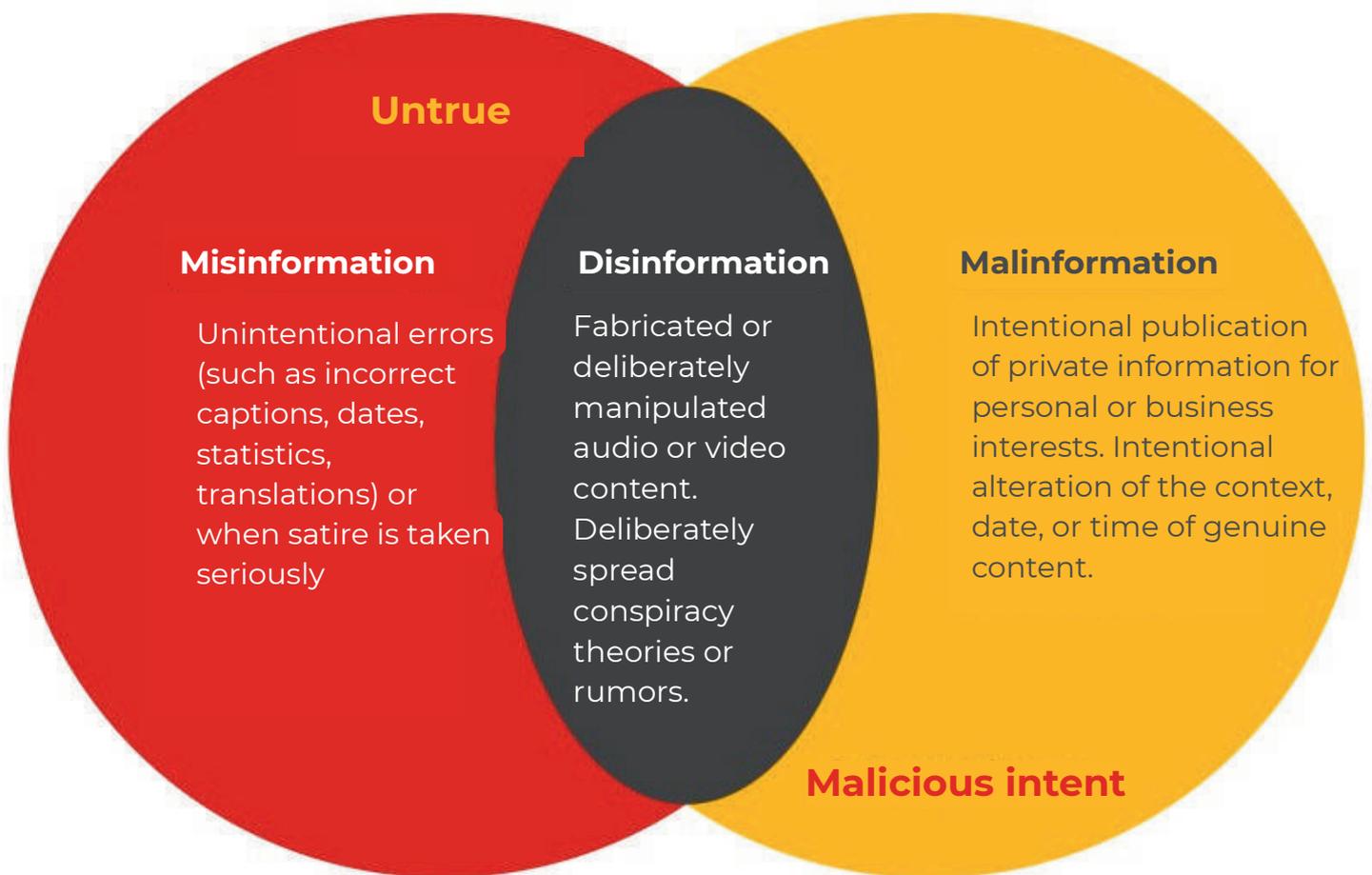
Untrue

Misinformation

Unintentional errors (such as incorrect captions, dates, statistics, translations) or when satire is taken seriously

Disinformation

Fabricated or deliberately manipulated audio or video content. Deliberately spread conspiracy theories or rumors.

Malinformation

Intentional publication of private information for personal or business interests. Intentional alteration of the context, date, or time of genuine content.

Malicious intent

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What are the motives for disinformation?

There are several reasons to create and spread disinformation messages. Here you may find some of these motivations shortly explained.

Ideological: Disinformation is being used to gain support for certain ideological or political ideas, to bring down other ideas or political opponents, or to direct discussion away from certain, unwanted topics. It is being used with the intansion to impact public opinion and the outcome of elections.

Financial: Some are motivated to create and spread disinformation motivated by financial gain. Engagement, clicks and likes are linked with advertising revenues, and there is little or no moderation on the trustworthiness of the content. Next to adverstising revenues there are actors who are willing to pay for creation and spread of fabricated news.

Humor / Satire: Misinformation not meant to harm, but might mislead nonetheless. Can lead to spreading of rumours, conspiracies or propaganda.

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How does disinformation spread?

Social Media platforms tend to have less strict regulations on content sharing compared to traditional media, leading to mis- and disinformation being much easier to spread. Their models are created to maintain attention and keep people on the platform as long as possible. To do this, it is beneficial to provide content that is shocking and evokes strong, negative emotions. The algorithms strengthen this kind of content, regardless of how trustworthy the content is.

Emotional aspects:

- AI-generated memes of real people can be used for indirect manipulation – even if we know they are fake, the image's message still has an emotional impact on us.
- "AI Slop" or randomly generated images are often used to attract an audience: for example, incredible pictures of places, images of aliens or historical events for conspiracy websites, etc. The reasons for this range from relatively harmless attention-grabbing and "engagement farming" for advertising revenue to the malicious spread of false and misinformation.
- People are more likely to share misinformation when it aligns with their personal beliefs, and when it elicits strong emotions. Social media algorithms boosts content that has high engagement, leading to the prioritisation of content that creates negative emotions like anger and fear.

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Disinformation, AI and Mental health

Common Concerns of Students regarding AI and disinformation:

1. "AI knows everything, why do we still need to learn things?"
2. "There is already a lot of academic pressure, so how can we still survive without AI?"
3. "We have to use AI to be fast enough and to keep up..."
4. "If AI can do everything, will we not be replaced?"
5. "If AI is so convincing, and there is so much disinformation online, how can we trust anything?"

Points to address:

AI does not know everything. AI collects this information in a fast and large-scale manner. AI simply replicates patterns of information that is already online by human input. AI can be wrong, and often replicates false information online, or even 'hallucinates' answers. If you don't understand the topic yourself, you can't tell when AI is wrong.

AI is good at routine, repetitive tasks, BUT lacks creativity, empathy, emotional intelligence, ethics, nuance and understanding context, all things that humans are great at.

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Disinformation, AI and Mental health

Common Concerns of Students regarding disinformation:

1. "How can I know if an account is fake or not?"
2. "Does it make sense to follow the news when you can't know if it's fake or not?"
3. "If we should be critical, then why should we trust what the school or the government says?"

Verification is an important skill
- **Check other sources**
- **Try reverse image search**
- **Look for fact checking sites**

Discussion Questions:
- Do you think relying on AI will have a negative impact on performing in exams, at work, or solving problems in real life?
- Where do you follow what's happening? On what basis do you choose that news source?
- Have you seen lately something that seemed off? (fake account, unreliable content?) How did you recognise that?
- How much time do you spend on social media, and how much of that content is authomatically brought to you by algorithms?

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Disinformation, AI and Mental health

Common Concerns of Students regarding phishing:

Discussion Questions:

1. What are some warning signs that a message might be a scam?
2. What should you do if you're not sure a message is real?
3. Who can you talk to if you think you've clicked on something suspicious?
4. How might someone feel after clicking on a phishing link?

Further Considerations for Students regarding Trust, Authority, and Scepticism:

Discussion Questions:

1. How can you be critical without distrusting everything?
2. What's the difference between healthy scepticism and cynicism?
3. If you don't trust the media, schools, or government, where do you get information instead?
4. Who benefits when people stop trusting any source of information at all?

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Disinformation, AI and Mental health

It is important to address common fears and worries of students when it comes to AI and online disinformation, as these can have major impacts on students mental health and well being. The amount of disinformation can be overwhelming, and next to enhancing critical thinking it can be useful to review social media consumption habits and develop healthy habits.

Easy Digital Hygiene Tips:

1 Adjust social media settings, by turning off notifications, turning on grayscale, setting time-limits for platforms etc.

2 Learn how to identify bots and suspicious accounts.

3 Limit media consumption during high-stress periods, and establishing routines to your daily life.

4 Learn to deal with FOMO and take time off from online once in a while.

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Disinformation, AI and Mental health

→ **Fear and hatered** polarize us and turn against each other instead of solving problems together.

→ **Read carefully** - Recognise that not all information online is accurate, and disinformation campagins are purposefully designed to confuse and mislead.

→ **Pay attention to alerting signs** - such as messages that are strongly emotional - they might be there just to make you angry

BE AWARE

STOP, THINK, CHECK

IGNORE CONSCIOUSLY, DON'T SHARE

→ **Unsubscribe or report** channels that show dis-information or hateful messages on your feed, and don't spread them

→ **Select carefully** which news you follow (which news paper, influencer, TV-sender...) and where (TV, radio, social media...). That will help you avoid getting exhausted.

→ **Form your own opinions** by talking with real people about things that are important for you. Such as which party to vote and why to vote. Or, what to do to solve real issues in your city. You can start by joining a local community, sports club, theatre, religious or ideological community, non-profit, or a start-up hub. Whatever your interests and worldview, it is worthwile to share your thoughts with other human beings.

Tools:

These critical thinking, media literacy, and digital literacy tools can help students be able to see signs of mis- and dis-information they encounter online. With AI becoming increasingly impossible to detect, these skills are needed more and more
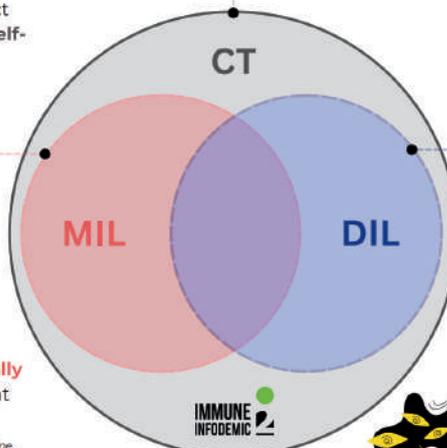

I2I VACCINES

CRITICAL THINKING

Ability to analyse, evaluate and reconstruct one's own knowledge – **self-correcting, self-assessing and self-monitoring** thinking

WHEN to use?
For all kind of information

Your guide: Truthseeker

MEDIA & INFO LITERACY

Ability to seek **reliable information** from various media sources and **evaluate critically** the reliability of encountered media content

WHEN to use?
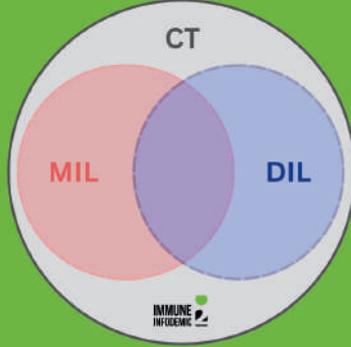*For all media content: texts, images, videos, audio; both printed and online, traditional & social media*

Your guide: Supercurious

Immune 2 Infodemic Instruments

DIGITAL INFORMA-TION LITERACY

Critical awareness of one's **digital footprint**, ability to manage **privacy issues** and personal data, and general awareness of **algorithms and AI generated content**

WHEN to use?
For managing digital footprint, privacy and algorithm-controlled content visibility: tracking cookies, personal data safety, social media streams and e.g. Google search results

Your guide: Facthacker

I2I Tools

for immunising against infodemic

Critical Thinking (CT)		Media Literacy (MIL)			Digital Literacy (DIL)		
CT 1 Socratic Questioning	**CT 2** Mind mapping	**MIL 1** STOP - THINK - CHECK	**MIL 2** Media Diary	**MIL 3** LOOK BEHIND	**DIL 1** SIMPLE SEARCH	**DIL 2** VERIFY with simple approach	**DIL 3** INVESTIGATE with lateral reading
CT 3 Argument mapping	**CT 4** Problem and Solution Map	**MIL 4** Fact or opinion?	**MIL 5** CHECK - 3 questions	**MIL 6** RECOGNIZE	**DIL 4** CHECK images & videos	**DIL 5** 10 STEPS to verify authenticity	**DIL 6** SET safe passwords
CT 5 Cause and Effect Diagram	**CT 6** Questioning Child - the 5 Why's	**MIL 7** IDENTIFY a journalist	**MIL 8** IDENTIFY a factchecker	**MIL 9** EVALUATE a scientific claim	**DIL 7** MANAGE privacy settings	**DIL 8** NOTICE micro-targeting	**DIL 9** RECOGNIZE safe applications
CT 7 Identifying Bias	**CT 8** Talking to Conspiracy Believers	**MIL 10** LIST and FOLLOW			**DIL 10** TOP questions for AI	**DIL 11** TRY feeding alorithms differently	**DIL 12** TRY experimenti ng with AI	**DIL 13** Experimenti ng with GenAI

Case examples (solved): PDF link

These cases with tools that can be applied to each case offer useful examples of real disinformation posts seen online

Case examples (solved): PDF link

Other cases for the classroom (unsolved):

These 'unsolved' cases offer useful examples of real disinformation posts seen online, for which students can try to think for themselves what tools can be applied to each case

Other cases for the classroom (unsolved): PDF link

Example structure for a lesson 1

Task	Learning Outcome
1) Introduction presentation & experiences of students	Understanding the types of mis-, dis- and malinformation. This part may include opening up discussion with students with help of some open question provided in this handboek.
2) Interactive games: 2 truths 1 lie or recognising images made by AI compared to real images.	Games such as 2 truths 1 lie may serve to get the students curious on the topic and test initially their own skills on detecting lies.

2 truths and a lie shows that the most convincing misleading information are based on reality, similar to disinformation campaigns that are often based on real stories. Games that include recognising images made by AI serve as a wake-up call on how hard it may be to recognise lies. |
3) Motives behind disinformation	Understanding why disinformation is created, spread and hard to regulate online
4) Bad news game	Interactive game that helps students understand the mindset of the one sharing disinformation, and how this occurs. Putting themselves in the shoes of the one that creates and spreads disinformation helps them to look the issue from another perspective recognise disinformation when they face it.
5) Wrap up	As wrap-up the students may share their experiences of playing the games and thought that rose during the class.

Example structure for a lesson 2

Task	Learning Outcome
1) Introduction presentation & experiences of students	Understanding the types of mis-, dis- and malinformation. This part may include opening up discussion with students with help of some open question provided in this handboek.
2) Background Information on Disinformation	Understanding how disinformation spreads. Giving background information so students understand the basic concepts, and situating them through real-life examples. Suggested core concepts are: e.g. Fake accounts, localisation, cross-platformity
3) Impact on us	Understanding the harmful effects of online disinformation. The students may reflect on how they use social media and apply tips from 'digital hygene' part of this package. Before starting the actual fact checking it is good to have a wider frame and reflecting on students experiences and worries about online environments.
4) How to immunize yourself	In this part the students will learn how to start fact checking, using the tools provided in this package. Presenting the 'solved' cases serves as an example on how to apply the tools.
5) Solving cases	In this parts the students may apply what they have learned to real world examples. The cases provided in this package may be extended by other examples taken from recent news. Solving cases independently or in small groups helps to boost ability to think critically and apply media and digital literacy skills in practice.
6) Wrap up	As wrap-up the students may share their fact-checking experiences and compare their results with others. To reflect on narratives that we see and share it might be of interest to provide some of our further readings on climate, AI or FIMI, such as the Net Zero story.

Example structure for a lesson 3

Task	Learning Outcome
1) Introduction presentation & experiences of students	Understanding the types of mis-, dis- and malinformation. This part may include opening up discussion with students with help of some open question provided in this handboek.
2) Impact on us (When digital hygiene breaks down)	This section focuses on the effects of poor digital hygiene, both individually and collectively. Students reflect on how misleading or manipulative content can influence emotions, increase anxiety or anger, reinforce stereotypes, or contribute to polarisation and mistrust. They are encouraged to think critically about their own habits – for example, reacting quickly, sharing without checking, or engaging with content that triggers strong emotions. This reflection helps students understand why digital hygiene matters before learning technical fact-checking skills.
3) Practising digital hygiene through real cases	Students apply what they have learned to real-world examples, individually or in small groups. By analysing and verifying content themselves, they practice healthy digital behaviours: questioning, cross-checking, and discussing uncertainty. This step reinforces the idea that digital hygiene is an active skill that improves with practice and that responsible behaviour online helps protect not only oneself, but the wider information environment.
4) Digital hygiene in social spaces	In this part, students reflect on how information circulates in everyday digital spaces and recognise digital hygiene as a shared responsibility. They discuss how to respond when misleading content is shared by others and learn that thoughtful online behaviour helps limit harm and protect the wider information environment.
5) Wrap up	As wrap-up the students may share their fact-checking experiences and compare their results with others. To reflect on narratives that we see and share it might be of interest to provide some of our further readings on climate, AI or FIMI, such as the Net Zero story.

What are the Booster topics?

🔍 **Climate Disinformation**   ✕

Climate Change disinformation is motivated by political and financial interests, and aims to **confuse and polarise public opinion**, making support for climate action less uniform/coordinated

Common **'Climate Delay'** narratives include claims that **climate solutions won't work,** that **clean energy would be unreliable,** and how **climate policies are harmful,** among other statements aiming to **undermine climate policy, science and activists**

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What are the Booster topics?

Main Climate Delay Narratives:

★ **Technological optimism:** idea that technological innovation and increased efficiency in energy production will make energy production emissions free, and energy intensive industries greener. This tactic avoids structural change, and does not address the root causes behind climate change.

★ **Doomism**: belief that climate disaster is already happening and nothing can be done to reverse it, so that the only rational response is to give up. This narrative reduces motivation and willingness to engage in climate mitigation strategies, as they are seen as useless.

★ **Individualism**: redirecting responsibility for climate solutions to individual consumer patterns (e.g. reduce your individual carbon footprint) - and diverts responsibility away from political and corporate levels.

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Further material: Climate Change

1. Net Zero Storyline game

2. Detailed Summary of Academic Literature on Climate Disinformation

3. Comic on Climate Delay

4. Tips for Countering Climate Anxiety

5. Article on changing how we talk about climate change

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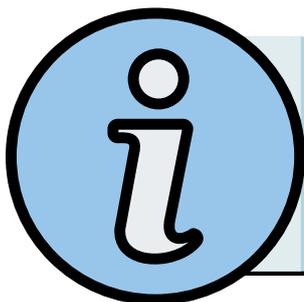
What are the Booster topics?

FIMI

interference by foreign actors, perpetrated by means of information operations
- Manipulative content and often through co-ordinated campaigns
- Conducted by both state or non-state actors, or through proxies
- Seeks to polarise and create divisions within the EU, and to undermine the EU's global standing and ability to pursue its policy objectives and interests

FIMI = Foreign Information Manipulation and Interference

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What are the Booster topics?

Key Features of FIMI:

★ Manipulation of public opinion, polarisation, and interference with democratic processes, posing a threat to EU stability and security.

★ Aims to destabilise our societies, damage our democracies and undermine the EU's global standing.

★ Complements military operations used by foreign states (e.g. in Ukraine)

★ Techniques are bot armies, AI-generated content, censorship, and coordinated manipulative behaviour.

★ Targeting EU candidate countries on their path to EU membership by undermining policies and values.

★ In late 2022, Russia conducted the majority of the 100 tracked FIMI operations seen in the EU, often through proxies or state-aligned actors.

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Further material: FIMI

1. <u>EDMO report</u> on Russian FIMI regarding Ukraine war and refugees
2. <u>Article</u> on Russian FIMI operations
3. <u>Video explaining what FIMI is</u> and what tactics it uses
4. Use interactive quizzes such as <u>this one by EUvsDisinfo</u>
5. <u>European Commission Handbook</u> on recognising disinformation for students
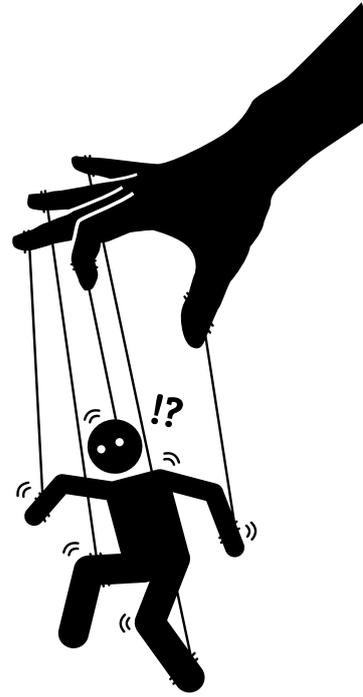
What are the Booster topics?

🔍 AI-enhanced disinformation ✕

deliberate information manipulation and interference that **utilizes generative artificial intelligence (genAI)** based on **large language models (LLMs)** for production and tailoring misleading content.

The main threat of AIs in information manipulation is **scalability**:

- **large amounts** of **personalized disinformation** can be produced easily with a fraction of **human effort**, and this disinformation can be **amplified** very easily

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What are the Booster topics?

Main uses of AI in disinformation:

- ★ Creation of persuasive, personalized texts – web pages, social media posts, comments etc.

- ★ Creation of realistic images

- ★ Cloned, counterfeited voice

- ★ Creation of realistic, deepfaked videos

- ★ Automated responsens and actions, e.g. writing messages and emails

- ★ Creation of realistic, responsive bot accounts that imitate human interaction

- ★ AI can be tailored to target specific local contexts or persons due to collection of large amounts of training data, making AI messages more persuasive

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Evolution of AI images

2024

(real Scottie)

2025

AI images and videos have gotten harder to detect in a very short period of time, and will continue to to become more and more realistic in the future. This measn that the classic signs of AI that are most often used to detect what is AI and what is not have or will become less useful

Signs such as: merged fingers, blurred details and overly smooth backgrounds that lack perspective can still be useful but you should not rely on them

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Further material: AI

1. <u>Teacher guide</u> for AI use
2. TedTalks such as <u>this one</u>, and <u>this one</u> on AI and critical thinking
3. <u>"Bad News" Game</u> for students to practice recognizing disinformation online
4. <u>Share useful social media content</u>, <u>such as this Instagram post</u>
5. <u>Useful guide on children and online information</u>