Funded by the European Union

Promoting ACTIVE and Responsible Citizenship in Schools

ACTIVE

Toolkit

I. Methodology for teachers

MODULE 1 Reliable source of information

Quality of data and how to approach information on the internet

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Attributed to:
Developed under the project ACTIVE financed by Erasmus+ program
Organization responsible for development of the material: Odpovědná společnost, z. s.
In collaboration with project partners
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Version 1.0
September 2022

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Module and Activity overview

Modules & Activities

MODULE 1: Reliable source of information – quality of data and how to approach information on the internet

"FACT-CHECKING IS CRUCIAL BUT AS WE WANT TO UNDERSTAND
WE HAVE TO GO BEYOND AND FIND MEANING"

Structure of the module:

Topics covered:

- Sources of secondary data and information
- Information as evidence
  - Criteria for data and information quality
  - Reliability of data and information
- Manipulation techniques to spread disinformation
- Fact-checking and lateral reading
  - Facts vs fake news and disinformation
  - Credibility of the source of information
  - Relevant criteria to judge credibility of the source of information

Main topics of the module:

In this module we will explore following topics:

How to use secondary sources of information accessible on the internet?

What to consider when collecting information – relevance, reliability and accessibility?

How to approach information on the internet?

How to get reliable and relevant information – source of information?

What are (not) the relevant criteria for misleading information?

What techniques are used to spread disinformation?

How to navigate between facts and fake news?

1.1. Quality of data and information

In this Module and corresponding Activity 1 we will at first concentrate primary on the credibility of the source of information which actually should be understood as one of the aspects of reliability (see below). But before starting Activity 1 it is important to have the whole picture about the criteria for quality of data to understand that credibility of information source is crucial but still only one of the aspect we should look for.

The data and information should have desired quality to be able to support our decisions. We can point out following dimensions of quality that the data and information should have:

- Relevance
- Reliability, validity (accuracy) and completeness
- Accessibility

Relevance of the data is the extent to which they give insight to the questions of the user. The information and data that are gathered should be also relevant for the issue concerned.

The relevance could be viewed in two dimensions:

i. Relevance for the user of the data
ii. Relevance concerned the issue (subject matter, target groups etc.)

The above dimensions of relevance are interconnected as we as a recipient want to have relevant data for making relevant decisions so the data should suit or purposes but also be relevant for the target group, problem, questions we want to uncover (for more reference see also the Module 6 Evaluation). The relevance concerning the subject matter is connected to the quality criteria of completeness (see below).

We should ask following questions regarding relevance of data:

Are the data relevant for the issue I am exploring?

What are the data about, what topics and questions are they connected to (or what questions they are invoking)?

What are the data telling me about the topic concerned?

Are data consistent with my area of interest?

Reliability of data refers to the extend we can trust and have confidence in the data collected according the topic concerned. We ask question: can we rely on this data/information to make decision or formulate conclusions about the issue?

To have confidence in the data we should consider following aspects:

- Source of the data (credibility) – how is the source of the data or the method used to collect the data trusted, proved to be reliable and credible.
- Validity – refers to the accuracy of the data. The data should correspond to/with real properties and characteristics of the object it is referring to.
- Completeness – is concerned about covering the whole scope of the topic (area of interest). We cannot rely on the data for our decision when they would be just partial and not complete. Completeness is also closely connected with different points of view about the topic concerned and with biases.

We should ask following questions regarding source of data (see more in the section How to collect data and How to approach information on the internet):

Who is the author, who created it?

What motivations do the creators have for presenting the information? How does that affect the reliability of the source?

Does the author have any particular interests in the outcome? What are (possible) motivations of the authors?

What are the references for the credibility of the source of information?

What is the perspective of the source/author?

Aren´t the data collected biased towards specific point of view?

What sources is the author using? Are these sources reliable?

We should ask following questions regarding validity of data:

What kind of information is it (fact/opinion/PR-promotion)?

Is the information provided based/backed by evidence?

Is the presented fact actually valid - accurate (evidence is provided, we trust the credibility of the method used)?

Is the information presented coherent itself and with other evidence available?

We should ask following questions regarding completeness of data:

What aspects of the issue does the data / information covers (does it tell all we need/should know)?

Does the data cover all the relevant aspects of the topic?

Are all points of view considered when collecting evidence?

Aren´t the data collected biased towards specific point of view?

Accessibility of data refers to the resources needed to obtain the data. From our perspective it is important to consider resources (people, time, money) we need to invest and willing to invest to obtain the data. Therefore we have to design the research with the resources we have available (e.g. we could not afford to do own survey as we do not have time to performed it, or we can´t afford to buy data from specific dataset).

As collecting data (evidence) is closely connected with the research methods used (desk research/field research) we should consider the aspect of accessibility directly linked with the design of the research (for detail see Module 3 Research phase).

We should ask following questions regarding accessibility of data:

What time will be needed to collect the data using anticipated methods?

What resources (personal, financial) will be needed to collect the data using anticipated methods?

What knowledge/competences will be needed to collect the data using anticipated methods?

Is the effort worth the benefits? Do we really need this data? What will they tell and what we will miss without them (see criterion of completeness)?

IMPORTANT From above we can see that the credibility of the source is crucial aspect of reliable information. But not the only one. To truly understand the issue to be able to take responsible decisions we should take into account also other criteria (the relevance, validity and completeness).

(SUMMARY) Take into the class When using we should check whether they are relevant (for us and concerning the issue) and reliable (credible, valid, complete). When searching data we should asses the accessibility of the data in accordance with the available resources.

1.2. Secondary sources of data and information

When using data and information from the internet we are doing so called desk research and using the secondary data sources. As opposite to doing field research by which we can obtain so called primary data (for more detail about the research methods see the Module 3 Research phase).

To be able to better navigate students between different sources of information on the internet see our recommendations how to approach the most common secondary sources of data and information.

Common secondary sources of data and information and how to use them

Official statistic databases

When looking for statistical data the best is to start with official statistics. On the international level statistics are provided by organizations like UN, OECD and Eurostat. On the national level there are statistical offices.[1]

These statistical databases should be considered as reliable. It means they should not distort the published data on purpose. But still we have to be aware of the possible limitations the data sets can have based on the methodology behind the data collection and definitions. This is quite beyond secondary school level, but as a teacher you should at least in your field of expertise understand possible limitations of the data presented in statistics (this would be mainly topic for geography teachers).

Do not mistaken the statistical data (in statistical databases) which can be perceived (if done methodologically correctly) as facts with analytical outcomes which are interpretation of these data/facts.

Other statistic databases

There are also non-governmental statistics published. In this cases we should be careful and investigate the sources and methodology behind the data published. Minimum requirement should be full transparency about the data sets (accessibility of the original data, not only the analytics).

As an (hopefully good) example could be Our World in Data[2] non-profit initiative done in collaborative effort with researchers at the University of Oxford. Actually they also present data about situation in world countries concerning the COVID-19 pandemic (see example).

Outcomes of surveys

Surveys are important source of information (and argumentation) concerning social phenomena (attitudes, political preferences, social behavior). About surveys we as users should be concerned with the reliability of the data, especially take into account:

- the methodology of the survey (sample size of respondents, method of contacting the respondents) has to be transparent:
  - surveys done by reliable agencies can be trusted

[1] Example for Czech republic: www.czso.cz

[2] www.ourworldindata.org

  - methodology of surveys done by other (not in principle reliable) subjects should be carefully investigated

- the sample size of respondents participating in the survey should be representative by:
  - number of respondents – this is concerned with confidential intervals of the findings presented (measure the degree of uncertainty or certainty of the findings)
    - but be aware that we actually do not need to big samples of respondents as for example for the whole national surveys (like election polls) the sample sizes being little over 1 000 respondents for 10 mil. population country
  - structure of respondents – it is crucial that the structure of respondents corresponds with the original population by main criteria (this will differ according the researched population but main characteristics usually are: age, education, gender etc.)
- methodology for acquiring respondents is crucial. There are more methods to be used but important to know is that when the respondents are acquired in limited environment (social niche) than the outcomes of the survey can represent only the views of this social group.
  - example are surveys at the newspapers sites (these are not reliable and can only represent, and mostly even not that, views of the readers of the particular newspaper)

We do not have to categorically discard surveys with not representative sample of respondents but we have to be careful with the interpretation of the findings. Mostly we can take such surveys as "first hints" that there might be "something" to formulate some hypothesis. But with acknowledgement that this hypothesis need to be further evaluated.

Official web pages of governmental agencies

Official web pages of governmental agencies should be primary source of information about the official stance of the particular agency. As governmental agencies have their own (political) agenda they should on their web pages represent this agenda. Thus we should not misunderstand governmental agencies with representation of "truth" as they are mainly representing themselves.

News and media

Judge credibility of the information presented by news web pages is quite complicated. On one side we could and should distinguish news providing by intention and best possible effort reliable information and disinformation webs with primary intention to promote disinformation and fake-news with objective to influence public opinion.

Many news organizations are following internal quality protocols that should ensure validation of the presented information. Many journalists would argue that they are just objectively reporting. As we have learned about objectivity in the Module 0 we can see that this is not easy or virtually not possible. In this sense we would not mind to have opinionated media if they would be transparent and provide validated information corresponding to reality. The media and (especially we as their users!) should also distinguish between opinions and facts. But this is in reality of the media coverage not possible as media are mostly asking for opinion experts and politicians, so in fact are mostly filed with opinions. It is fine as far as we are aware of it.

Big question is balancing different opinions in the media. Simply said should we give space to all represented the society, should we give also space, let's say to Hitler? This is truly not easy question and journalists often make mistake just asking questions (sometimes very bad questions) to experts/politicians without finding the real arguments by themselves and thus filing the media space with nonsense without giving it proper context. The genuine example is well documented deliberate and successful attempt to promote doubt in public about scientific research about impact of cigarettes on human health and man influence to climate mainly because journalists wanted to remain objective and give space to every "opinion".[3] The problem is when evidence is confronted with PR promotion in the limited news space.

We should be also aware that media are private profit bodies and one of their main objective is to make profit. There is nothing wrong about that but we can clearly see the consequences when new have to be attractive to make profit. Problematically thorough investigation and giving context is not as attractive as providing shocking and controversial opinions.

(SUMMARY) Take into the class As it is quite hard to navigate in the world of media we should still, when reading the news article, distinguish the following:

- is the information provided transparent (do we know the sources)
  - still recommend to validate the source by your self
- does the news organization validate information presented
  - still recommend to validate the information by your self
- isn't the "news organization" presenting deliberate fake-news and disinformation
  - validate the source and validate the information
- need to distinguish between facts (can be validated) and opinions
  - use your own judgement, do not rely only on the rubric of the article
- be careful about commercial/advertisement content presented at news pages
  - should be marked ad advertisement (paid contend)
- is the news organization opinion oriented. This might not be issue to disregard the information that they provide but we should be aware of it and understand that we would get only (even if validated) information corresponding to certain point of view
  - look for different opinions, points of view by yourself

Wikipedia

Is Wikipedia reliable source of information or should we disregard it completely as unreliable? Some think and many arguments would be that anyone can write on Wikipedia. Put it simply this is not true and Wikipedia has its procedures who can edit the articles. And procedures for corrections. But this does not mean that we can take the information provided on Wikipedia for granted. So how can we use Wikipedia? We suggest to use Wikipedia critically but it could be used (and suggested to students) as possible first starting point about the subject as Wikipedia often provide more points of view and most importantly links to other sources that can be and should be further explored.

[3] You can find research papers concerning this issue or this topic was quite well adapted by BBC series How They Made Us Doubt Everything.

As Wikipedia is widely used its content also in many cases represent the most generally used definitions and points of view. So we do not have to agree what is written in Wikipedia but we should be averse what is saying as many people would use this information as the "correct" one.

(SUMMARY) Take into the class Use Wikipedia as possible starting page. But use it critically, see if different points of view are presented and explore other reference to learn about the subject.

Social networks

Social networks (mainly Facebook, Twitter, Instagram, TikTok) are today for students probably the primary source of information and means of communication for sharing opinions and information. On the other hand social networks are actually one of the least reliable source of information. This is for many reasons that are, we can say embedded in the social networks:

- only short information without context and deeper explanation is provided/shared
- algorithms of social networks enclose people in "social/filter bubbles"
  - "a filter bubble is kind of like your own little world where like-minded people echo each other. It's based on what you like, share, and engage with online and selectively shows you relevant information."[4]
  - you will than receive primary (only) information that confirms your initial point of view
  - this strongly promote confirmation bias
- with social bubbles and direct marketing campaigns on social networks you have no idea (without deliberate action) about information that groups with different opinion receive
  - this information gap is absolutely crucial because of this phenomena we are not able to communicate any more with someone with different point of view as we do not basically understand their argumentation. As this argumentation s based on information we have never seen
- people are social and emotional beings and as research shows[5] more controversial and shocking news are spread much faster. Unfortunately fake-news and disinformation are designed to be controversial and shocking and to induce emotions and such are shared and spared faster (false news stories are 70 percent more likely to be retweeted than true stories are)[6].
  - *researchers from MIT*: „we saw a different emotional profile for false news and true news…People respond to false news more with surprise and disgust"
  - *researchers from MIT*: „people can gain attention by being the first to share previously unknown (but possibly false) information"
  - disinformation is mostly disseminated by using specific manipulation techniques (see below)
- social networks play crucial role for teenagers and their status on social network (likes, followers) is directly reflected in their status among school mates. So students are actually forced by the social networks algorithms to share shocking, interesting and potentially false information as these are prone to get more likes and shares.

[4] from: https://inoculation.science/
[5] See for examene study from MIT: On Twitter, false news travels faster than true stories
[6] MIT study: On Twitter, false news travels faster than true stories

- for most teenagers influencers from social networks are their main role models and someone they believe and trust.
  - the only measurement of "quality" and "relevance" of the influencer is number of followers
  - influencers credibility can vary quite rapidly
  - many teenagers aspire to become famous on social networks and be influencers them self
- and there is much more, and still under research, concerning the impact of social networks on the cognitive functions and behavior
  - shortening the span and ability to concentrate
  - loosing ability to "entertain myself", as teenagers and children express boredom if not connected to social networks or not entertained by someone or something (YouTube, Netflix etc.)
  - rise of social networks is being connected to rise in child's suicides, obsessive behavior, anxiety and depression

For further sources you can search for your own. We can in this regard recommend quite accessible but still relevant documents about the role of social networks and their impact on teenagers as:

The social dilemma (on Netflix)

Social Media Dangers Documentary — Childhood 2.0 (on YouTube)

15 Minutes of Shame (on HBO Max)

The social media beauty cult (DW Documentary on YouTube)

One practical tip concerning validity of the content presented on Facebook and Twitter. Official sites of government, news and other organization should be verified and marked by blue verification mark (see example for BBC News bellow):

(SUMMARY) Take into the class This is quite complicated topic as students are to some extend (or at least they perceive it that way) reliable on social networks and are pursuing their own strategies to be accepted, admired and get, let's say, famous. How we can in this environment ask teenager to post something responsible? Anyway the discussion should be there and we should try to promote culture (in the class/school) that sharing fake-news and disinformation is "not cool". But be aware of shaming and cancel culture (see more in Module 2). Many teenagers can even feel trapped by social networks so we should help them out by promoting (giving them) other self-value then by number of followers and likes they have on social networks.

The information presented on social networks should by verified by fact-checking and lateral reading (see below). We should trust only sites we have already previously verified and proved trustworthy.

YouTube and other video sharing sites

For YouTube and other video sharing sites apply the same as with social networks (see above). In this context we are more passive recipients of the content and the content we receive is based on our behavior on the sites and their algorism. Crucial is to recognize that the algorithm of site like YouTube is leading us into strong confirmation bias (see also Module 2) as they strongly promote to us only the video content with the same (one) point of view.

EXAMPLE You can try to experiment by yourself by clicking and opening specific opinionated content on YouTube and see that the algorithm will starts to provide you with only content with similar opinion. You can try for example some of the climate change denials sites. The change of the content offered to you will change quite rapidly without any regard what have you watched previously.

(SUMMARY) Take into the class If we want to consume content on video sites like YouTube responsibly we conscious approach and deliberate action to explore and seek is inevitable needed. YouTube and similar sites can be great source of information but we should approach them with critical mind and deliberately seek for different point of views. We should also invest time to see sites we do not agree with and even the disinformation sites to understand the arguments so we can debunk them in communication with someone who believed them (see the information gap mentioned above in context of social media).

Internet sites in general (e.g. sites of NGO, companies, blogs, private pages etc.)

Internet sites in general represent point of view of the individual or organization that owns them. If any facts are presented or claimed we should use fact-checking and lateral reading (see below) to verify the information.

We should not in principle dismiss opinionated or some deliberate sites. Like many NGO´s are promoting some issue and way how it should be dealt with (as for example environmental agencies have quite strong missions). This does not necessary means that the information provided has to be false but we should asses the validity of the facts presented.

Fact-checking sites

With fact-checking (see below) can help fact-checking sites which fact-check information and credibility of internet sites. In international and English speaking environment (American and Great Britain) are known these fact-checking sites: Politifact, FactCheck.org and Snopes.

In each country there are national fact-checking site suitable for national context.

These fact-checking sites are considered as reliable but we still should remain critical and do not take everything they claim for granted. The fact-checking sites should definitely help with evident misinformation and disinformation sites. When it comes to controversial and “live” issues that could be supported by scientific findings the usage and explanatory potential of fact-checking sites could be limited.

In any way fact-checking sites should provide explanations and evidence for any claims they make about assessed information and organization/web site. This should be their job, theiy should help users

with providing evidence for the fact-checking. Not claims. See also that many fact-checking sites are using scale as it might not be every time clear distinction between false and true[7]. This approach should be appreciated as it gives user more broader understanding about the evidence available.

EXAMPLE One of the national fact-checking site (we will not name as it is national site) tried to debunk misinformation about proclaimed negative effects of COVID-19 vaccines. Their argument was that the vacines are safe and as an evidence was provided citation from one of the highest EU officer. We can see that this is not something we should consider as evidence and so we should not consider this as relevant fact-checking approach. By this we do not say, and we in fact cannot be this evidence know anything about safety of vaccines, just that this is not evidence to prove it. Relevant evidence would be to show scientific research assessing safety of vaccines. By providing such facts there could be discussion (evaluation) about relevance of the evidence (e.g. methodology of the studies and so on). Remember that facts can be assessed whether they are valid, opinions or proclamations cannot.

IMPORTANT When using fact-checking sites be aware of own confirmation bias and approach their findings correctly, that means always ask: Do they support their assessment by evidence, and do they provide relevant evidence?

(SUMMARY) Take into the class Suggest students to use fact-checking sites to help with finding relevant evidence. But still keep in mind that assessment done by fact-checkers should be based on evidence as they do not have any super power to guess what is true or false.

Scientific journals

Scientific journals are important source of data based on research which should (see comments below) be acquired through methods proven to be accurate. Scientific papers can be searched on the internet (use Google – precisely Google scholar). But unfortunately some of the journals have restricted access.

IMPORTANT Someone could say that scientific papers are methodologically 100% reliable as they are going through the peer review process but unfortunately this is not always the case (see the example below). Be also cautious (hesitant) to interpret preprints and also papers from some not reliable open (so called predatory) journals[8]. See below how to approach scientific papers with caution.

EXAMPLE As we have unfortunately seen with the research published during COVID-19 pandemic, not all the papers were quite correct from the methodological point of view. We do not want to go into details[9] but would like to point out some principles to consider for your research. For example some research did not properly consider the relevant stratification (differentiation) of the population or did not focus on relevant aspects or did not consider right pairing of compared groups. Concretely as some

[7] Snopes for example classifies in 12 categories. See their Fact Check Ratings scale.

[8] For more info see article published by Nature: Predatory journals: no definition, no defence or see recommendation by Charles University in Predatory Journals and Publishers.

[9] Following is based on our own observations supported by long term experience with scientific and evaluation methods. And it is also backed up by evidence from conducted research showing low quality of research in the first wave of pandemic. You can look up evidence and findings for yourself on the internet or see for reference as an examples from the scientific papers assessing quality of research during pandemic: Following the science? Comparison of methodological and reporting quality of covid-19 and other research from the first wave of the pandemic / Methodological quality of COVID-19 clinical research / Many early COVID-19 studies have low-quality design, risk low-value evidence, research finds / COVID-19 coronavirus research has overall low methodological quality thus far: case in point for chloroquine/hydroxychloroquine

research showed the vaccines had different protective effect over time and for different age groups. So any research without recognizing such distinctions should be noticed as not entirely reliable for decision making or we should be careful about the interpretation of the findings. Many issues were also connected with comparing groups of respondents (e.g. vaccinated and unvaccinated) without considering right pairing based on age and other properties and also considering differences based on the mandatory government limitations for one of the group (like compulsory testing only for one group). All these should have been considered. For more detail how design research and proper assessment and compare groups see the Module 3 Design own research and Module 6 Evaluating impact.

(SUMMARY) Take into the class So even the scientific papers can be seen as generally reliable source of information we should use them with caution and use critical approach. First it is not good approach to look only at the abstract. It is always recommended to see the methodology, the detailed findings and discussion in the full text document. Especially when there are contradictions between findings in the scientific literature (papers published) or we are dealing with some controversial subject, more sources of information and comparison between them is needed (see also MODULE 3 Make sense of information). We do not have evidence for that but based on the emphasis on strictness of the peer review process the papers in journals with high impact factor should be more reliable as their methodology should be acknowledged through rigorous peer review process.

1.3. How to approach information on the internet …the source and fact-checking

We are trying to go beyond fact-checking but **fact-checking** is also important part when collecting information on the internet.

1.3.1. What to avoid (not relevant criteria to judge web content)

As studies shows that (not only)[10] students tent to evaluate credibility of information on the internet based on **not relevant criteria** like:

- web domain (like .org, .com, .gov, .edu)
  - anyone can register most of the web domains (like .org, .com and others) and so the domain itself does not tell us much or anything about the source information. So we need to take a closer look who is the owner of the domain and do not relay on the domain itself
  - national domain like .cz, .it, .sk might show that the web site is intended for users in particular country but also could be registered by anyone
  - the .gov domain space is operated for the US government and its agencies. So the .gov domain name web pages are US government agencies. This however does not mean that we have to take the information presented for granted (as true) but the information should represent the view of the particular US government agency

[10] This is also relevant for Ph.D. students and university professors and researchers.

    - the .edu domain could be (since October 29, 2001) registered only by postsecondary institutions and organizations that are institutionally accredited by an agency on the U.S. Department of Education
        - but keep in mind that schools/universities web pages can contain several type of information, even blogs where any one can write. So the sites does not necessarily have to represent the position of the institution
- web design (graphic design, layout, colors, resolution, or logo)
    - as web design can be an indicator or a red flag for misleading information it never can be a (dis)prove of reliability of the information presented
    - anyone can design whatever web page they want
- by amount of information and data presented about the topic
    - judge web pages solely on the amount of information and data (and beautiful charts, statistics or infographics) is presented about the topic by itself (without checking the sources) is not a criterion for credibility of web pages and the data and information presented
        - charts cannot be taken as trustworthy by itself
- about and contact page
    - asses reliability of the web page based on information provided at the About or Contact page
        - any organization can present themselves as they see fit to their purpose (even an oil lobbing company can present them as green activists…)
        - crosschecking and lateral reading (see below) is needed to check trustworthiness of the web page
- biased and opinioned content
    - yes we are looking for reliable evidence but we should not dismiss information from evidently biased or opinioned articles or web pages
    - instead we should take the perspective of the author into account (recognize their point of view and consider it when assessing the information presented)
    - the evidence they provide can be credible even if they are advocating from certain perspective
        - like an activists showing evidence of someone polluting environment (we should asses the evidence provided and not dismiss it just because it is presented by someone representing certain point of view)
    - such information is also very useful to understand the point of view (perspective) of particular group
        - as now in with the Russian invasion of Ukraine we need and should understand how Russians perceive the conflict (Russian perspective) and the “evidence” they are exposed to
        - the same with the climate change “denials”, if you want to argue with them you should not just provide evidence but you should understand what are their arguments based on
    - mare about biases in the Module 2
    - for more information how to deal with contradicting perspectives see the Module 2 Values and norms

- presence of links or citations
  - links to the source of information are crucial for fact checking the data provided to know what is the source and what methods were used to collect the evidence
  - but we cannot rely solely on fact that the web page provides lot of links and/or citations. Not just their presence but relevance and reliability should be assessed (the sources of information could be spreading disinformation)
- donations tab on the web page
  - for many NGOs the donations from public are the only source of income and we need to say that legitimate income. This does not mean that the organization is not trustworthy
  - an organization to be financed by actors of particular interest is an another story (e. g. documented are organizations financed to serve interests of tobacco and oil industry to prove and promote non harmful effects of cigarettes and deny climate change using sophisticated strategies)[11]
- video as evidence
  - video content is by someone[12] taken as reliable source of information as it is believed "it is documenting the reality" and so indisputable. Without any real evidence who, where and by whom the video was recorded (or fabricated…)
    - yes, video is very solid evidence, but we need to be sure that it is really showing the declared situation and that it was not fabricated or taken somewhere else or in another time
    - importantly: we also need to ask if the video is really shoving what is claimed to show (is it really supporting the argument)
- advertising content
  - many students even do not recognize an advertising contend as an advertisement
    - 2/3 of students did not tell the difference between news and adds even when it is labeled as such[13]

(SUMMARY) Take into the class We all need to be careful about reliability of information on the internet. Even as a teacher be careful not to assess web pages based on irrelevant criteria (see above). Fake-news are overlooked even by Ph.D. students and university teachers and scientists. So we should by maximally self-critical in this matter.

For more reference about fact-checking and examples to be used in the classroom you can use materials from Civic Online Reasoning curriculum developed at Stanford university[14]. *Note: this curriculum is providing very good explanatory videos, examples and templates related to fact-checking. But from our point of view it is concerned almost solely on the source of information and as this is a good and needed start, we would argue that more needs to be assessed about quality of data and information than just the source. For this reason we would be little more critical even about content presented by credible sources like news, experts, and scientists. As we would say evidence*

[11] I tis documented by several studies that you can criticaly explore by your self. BBC Sounds did an entertaining podcast series aboud this findings: How They Made Us Doubt Everything.
[12] In the reserch done by Stanford University (2019) it was 52% of students in the conducted study.
[13] STUDENTS' CIVIC ONLINE REASONING A National Portrait done at Stanford University (2019)
[14] https://cor.stanford.edu/curriculum/

based not eminence based information is needed (see the principles how to collect evidence and healthy skepticism principle in Module 3 Research phase).

1.3.2. What to be aware of (manipulative techniques)

Disinformation and misinformation is often spread using specific manipulation techniques. These techniques are exploiting knowledge about our behavior.

Manipulation techniques used to promote disinformation and fake-news based on research[15]:

Emotional language

"Emotions are powerful tools of persuasion. Research shows that using emotional words, especially ones that evoke negative emotions such as fear or outrage, increases the viral potential of social media content." "Using emotionally charged words provoking outrage is helping (even untrue) information go viral. Rather than reacting immediately, be cautious and critical when emotionally charged words are used in the content you see".

See also our discussion about social networks as secondary sources of information above.

Incoherence

"Incoherence occurs when someone uses two or more arguments to make a point that cannot logically all be true at once. It's a technique most commonly seen in longer discussions about a particular topic."

It is important to notice that for the "followers" of conspiracy theories the conspiracy theory seems absolutely coherent as it seemingly provide explanation for issues otherwise unexplained. This is by over-interpreting evidence as conspiracy theories are mainly based on real evidence/phenomena but is attaching to it meanings that are (when we look properly) actually not supported by the evidence provided (see also Module 3 Make sense of information).

"In times of uncertainty, it's tempting to look for sinister motives or hidden causes behind what's going on. It's healthy to be skeptical, but in real life, many things can't be reduced to a simple cause (conspiracy)."

False Dichotomies

"A false dichotomy (or false dilemma) is a logical fallacy in which a limited number of choices or sides are presented as mutually exclusive, when in reality more options are available. It's also known as the ´either-or fallacy´."

In this way by dismissing one option the conspiracy theory is seemingly giving the argument for second option. But in reality none of the options are valid.

Scapegoating

"Scapegoating is when a person or group is singled out or takes unwarranted blame for a particular problem."

[15] Adopted from Inoculation Science (initiative from JIGSAW, University of Cambridge and University of Bristol). See videos on their web site that discuss each of the manipulative techniques.

This is quite common tactic to organize a group of people by strengthening the group's identity by finding common enemy – fighting against someone. Unfortunately we do not see this only in conspiracy theories and disinformation tactics but is also common for politics. Politic is than not for something but against someone, to fight someone. This is proven but dangerous tactics as we could witnessed in history or in actual political context.

Ad-Hominem Attacks

„An ad hominem attack is when someone attacks the person making an argument, instead of addressing the argument itself. Ad hominem attacks are commonly used to redirect the listener away from the subject at hand and towards an individual. They can be baseless attacks but aren't necessarily, as in some cases a messenger's credibility is relevant to the argument at hand."

Fake expert

"A lie can appear more reliable when a source backs it up. Even if that source doesn't exist, isn't credible, or was misquoted; it's easy to be blinded by fancy degrees and medical terminology."

Be sure to check the credibility and actual existence of the declared source.

(SUMMARY) Take into the class First it is important to acknowledge that we are all (I am also) prone to such manipulation techniques. We have need to be excepted and to belong somewhere. This makes us vulnerable to such manipulative techniques. These techniques are effective when we lack awareness of ourselves and our identification with a group, idea, opinion (see also more in the Module 3 Making sense of information and Module 2 Values and norms).

1.3.3. How to approach information on the internet

As we now know what are not the relevant criteria of credibility about the information on the internet (see above), how should we proceeded? The approach to the information on the internet should be approached in following steps and considering following criteria:

I) Source of information

QUESTIONS TO BE ASKED:

- Tree main questions to be answered: HOW, WHERE and BY WHOM the data (proclaimed facts) was produced
- Who is behind the information?
- Who created the article/web page/graph/social media post?
- Is it reliable source?
- Can I trust it?

METHOD TO BE USED:

- ✓ Do not rely on the About us/Contact page of the web site
- ✓ Check the original source of information when accessing information on social media
- ✓ Find information about the author(s), organization on other sites – open new tabs on the browser and search for the authors credibility (lateral reading)
  - search for sources outside the web page concerned
  - you can also use fact-checking sites that often provide information about the organizations (e.g. Politifact, FactCheck.org, Snopes)

Lateral reading basically means to check the credibility of authors by finding information about them provided by other reliable sources. Practically it means to open other tabs to find ("google") references and further information about the authors or organization owning the web page. For more reference and examples you can check the Civic Online Reasoning curriculum developed at Stanford university[16].

II) The perspective

QUESTIONS TO BE ASKED:

- Who said that? And Why?
- What is the perspective of the authors about the issue concerned?
- What are their points of view and positions?
- Does the source have an expertise in the topic and is he/she providing evidence?

METHOD TO BE USED:

- ✓ Do not rely on the About us page of the web site
- ✓ Use the information found about the author(s), organization on other sites – open new tabs on the browser and search for the authors (lateral reading)
- ✓ See and analyze the content of the article/web page

III) The evidence provided

QUESTIONS TO BE ASKED:

- What evidence is provided?
- Is the source of the evidence trustworthy (see step I)?
- Are the data and information provided reliable, valid and complete (see criteria for quality of information above)?
- What type of information - is it opinion or fact (or opinion supported by evidence)?
- Is the evidence relevant for the conclusions made?
- What perspective and arguments is the evidence supporting?

METHOD TO BE USED:

- ✓ Analyze the content of the article/web page (the evidence prided)
- ✓ Take into account the perspectives of the author on the topic (see the step II)
- ✓ *Evidence based not eminence based information is needed.* We need solid evidence and not just titles (no meter of what expert says it ask: Is he/she providing evidence or just an opinion?)…
- ✓ Use the information found about the author(s), organization on other sites – open new tabs on the browser and search for the authors (lateral reading)
  - see the reference provided and also check these references (the sites cited from must be also checked using lateral reading)
  - use other references about the evidence provided by other sources
  - use fact-checking sites

Opinion vs fact: it is important to distinguish between opinion and facts (data). Facts can be in principle verified (fact-checked). Opinion can be examined whether is it supported by evidence, experience or expertise. We can also speak about analysis and synthesis as form of already interpreted data presented in specific/selected way.

[16] https://cor.stanford.edu/curriculum/

IV) Find other sources

QUESTIONS TO BE ASKED:

- Are there other sources of information for the topic?
- What other information is available about the topic?
- What other perspectives are about the topic?

METHOD TO BE USED:

- ✓ Search for other sources of information
  - do not rely on the first or three (four, five…) search output you find (the first or even first three findings on the Google search dos not need to be the best ones)
  - with the new source start from the step I)

IMPORTANT It is not just about misinformation and disinformation or fake-news. It should be about understanding the real meaning of the information. Understand what the information is really about by considering its content, context and the author perspective. To be able to distinguish fact from opinion and understand the importance of the role of the author. But still be aware to look for evidence based not eminence conclusions. It is not about not trusting the experts but demanding evidence and reasonable explanations not declarations. And in cases with no sufficient evidence we can operate with "expert opinion" but we should be aware that it is just an opinion based on limited evidence.

(SUMMARY) Take into the class Make sure students understand fact-checking by lateral reading and are able to distinguish "obvious" misleading and manipulative information – disinformation and misinformation. Students should understand that persuasive and seemingly coherent information could be in fact misinformation or fake-news. Students should also acknowledge that in many cases more effort (research) is needed to have more understanding about the issue to make responsible conclusions and decisions.

Students should primarily learn to recognize and distinguish facts (even proclaimed) from opinions and PR propagation. Mastery (and the end goal) would be to see the interpretation of the facts as interpretation and not as facts as itself and thus understand objectivity (see the discussion about objectivity above). Be also aware that opinion does not need to be discarded but we should recognize it as such.