
# BE SMART, BE TOLERANT!

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Erasmus+ Project Nr **2022-2-RO01-KA220-YOU-000099705**

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# BE SMART, BE TOLERANT!

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Strada Calea Severinului, Nr.59, Bl.1, Ap1, TÂRGU JIU, România

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# CHAPTER I

## 1.1 Traditional vs. digital media messages – a historical presentation

### 1.1.1 Definitions

Media plays a key role in our everyday lives - it educates us and allows us to keep track of the day-to-day news. In this globalised world, media is the best platform for us to get information about what's happening around us on a local and global level and stay in touch with each other.

It is safe to say that nowadays most of us cannot live without the media or, at least, cannot ignore it. It impacts almost every aspect of our lives and is everywhere around us. Even if we choose not to have access to the internet or one or several social media platforms, the media still reach us.

Before assuming that this can only occur now, let's look back to a time when the so-called traditional media dominated the information landscape. If we were to think back to the common informational tools from 20 years ago, we may conclude that the manipulation of society, whether for good or bad purposes, began in the 20th century, but this is just untrue. We also have a number of examples from earlier history.

However, before discussing concrete examples and introducing the two biggest types of media, it is wise to start by understanding the concept and evolution of media. So let's dwell on it. Some of the media definitions are:

*„The word media is a plural form of the Latin word 'medium' meaning 'middle ground or intermediate'. Its usage as a word to describe newspapers, radio and other sources of information likely derives from the term 'mass media' which was a technical term used in the advertising industry from the 1920s on."*[1]

*„This is a term which covers all the means of communication which have functions such as informing, raising awareness, education, socialization, entertainment and agenda setting, including all kinds of oral, written and visual images."*[2]

[1] https://www.macmillandictionaryblog.com/media
[2] https://www.igi-global.com/dictionary/media/18142

*„The media [uncountable, plural] the main ways that large numbers of people receive information and entertainment, that is television, radio, newspapers, and the Internet"*[3]

There are many definitions, however, simply put, media is a channel of communication. We use different types of communication (e.g. newspapers, television, etc.) to **inform, raise awareness, educate people, advertise and provide entertainment,** etc.

When it comes to mass media, the definition is:

*„Mass media - the newspapers, magazines, television, and radio that reach large numbers of people."*[4]

The difference between mass media and media is the target audience they are trying to reach. The mass media is designed to transmit information to a large audience. Thus, any media intended for a larger/mass audience is called Mass Media. It is the essential driving force that carries the given message from one person to another, from one group to another, or from company to the mass.

### 1.1.2 History of media

*Early forms of media*

Researchers believe that cave paintings found on the Indonesian island of Sulawesi dating back to forty thousand years ago, as well as paintings discovered in caves in France and Spain are the first examples of communicating through a medium[5]. While experts do not agree on what the purpose of such paintings was, one theory is that humans used these depictions to send messages to others as to what animals were safe to eat without using words.

Ancient Egyptian hieroglyphs, a mix of pictures and sound symbols, played an important role as well. Experts believe that the ancient Egyptians created hieroglyphs not only to share stories but also as a way to accurately document and communicate information connected with religion and governmental structures.

The Persian Empire – c. 550–330 BC – played a major role in the history of human communication through different media as well. Persian Emperor Cyrus the Great (c. 550 BC)

[3] https://www.oxfordlearnersdictionaries.com/definition/american_english/media
[4] https://dictionary.cambridge.org/dictionary/english/mass-media
[5] Medium – singular of media.

developed the first ever real postal system. It was an effective intelligence-gathering apparatus, called Angariae[6].

We must not forget, folktales, poetry, and songs, including chants or ballads, that were transmitted from one generation to another by word of mouth. This allowed different cultures to transmit their history, literature, law, and other knowledge orally across generations. Eventually, these stories and songs were written down, collected and published allowing to preserve it for years to come.

*Figure 1 - The Altamira cave. Prehistory and cave paintings. Source: https://www.spain.info/en/*

*The introduction of the printed press*

The next major development in media was mass printing, which improved people's access to news and other information while simultaneously raising literacy rates as more people had access to books and other written media.

The printing press was invented in China around the year 700 A.D.. The oldest known printed book is said to be the 'Diamond Sutra', a Buddhist book from Dunhuang, China which dated to around 868 A.D. during the Tang Dynasty.

The printing press was further developed in Europe by Johannes Gutenberg with his invention of the Gutenberg press in the 15th century. The printing press accelerated communication and,

[6] https://marketbusinessnews.com/financial-glossary/media-definition-meaning/

as a result, the spread of information since it took a lot less time to print books than handwrite them.

*The rise of mass media*

The first newspapers started to appear at the beginning of the 17th century, but there were few readers due to the low literacy rate. As more people acquired literacy skills, the media's audience expanded. High-circulation newspapers like The Times of London had enormous readerships by the early 1800s. By the end of 1900, print media could be found in the form of books, pamphlets, magazines and newspapers.

In 1895, Italian inventor Guglielmo Marconi successfully used radio waves to send a message via Morse Code over a distance of one kilometre. By 1914, Reginald Fessenden, a Canadian inventor, developed a machine that could sustain a radio wave and was powerful enough to broadcast music and voices over thousands of miles[7]. Following these inventions, the first radio station was created in the 1920s.

In 1920, Detroit, Michigan, became the first city to broadcast radio news. Then, sporting events and concerts were transmitted to the general public. By the middle of the 1920s, there were over 500 radio stations transmitting news, sports, variety shows, music, and everything in between. Additionally, most homes in both Europe and the US had radios by the 1930s. However, shortly after the end of World War II, television surpassed radio as the most significant electronic mass medium globally.

In Europe, Asia, the former Soviet Union, and the Americas, television was first introduced as an experimental technology in the 1920s and 1930s. The kinescope, an invention by Russian Vladimir Zworykin that captured images on motion picture film, served as the forerunner to modern television in the 1920s. Then, in 1926, John Logie Baird gave a public demonstration of a television system in London. However, it wasn't until after World War II that it was extensively embraced as a medium of mass communication worldwide.

[7] https://www.techopedia.com/definition/1098/media#:~:text=Media%2C%20the%20plural%20of%20medium,%2C%20magazines%2C%20and%20the%20internet.

*Digital revolution*

The digital revolution, sometimes called the 3rd industrial revolution, refers to the transition from mechanical and analogue electrical equipment to digital technology. The latter first emerged in the 1980s with the appearance of the Internet.

The invention of the Internet and the World Wide Web in the 1960s and 1970s and their subsequent commercialization transformed information sharing and international communication and had a great impact on media. With the concept of the Internet and computer devices, the world got globally connected. The Internet allows the transfer of data, information, and communication worldwide, connecting organisations, devices, and people in a decentralised and distributed manner.

The digital revolution has brought us a different type of media – the social media.

„Social media - forms of media that allow people to communicate and share information using the internet or mobile phones".[8]

There are many forms of social media, including blogs, micro-blogs, wikis, social networking sites, photo-sharing sites, instant messaging, video-sharing sites, podcasts, widgets, virtual worlds, and more.

Nowadays, billions of people around the world use social media to share information, learn, advertise, make connections and entertain themselves.

As precursors to what social media is today, bulletin board systems were developed in the 1970s, and Talkomatic was a multi-user chat room founded in 1973 at the University of Illinois.

According to the actual definition of social media (highlighted above), the first online social media network was SixDegrees.com, which started in 1997 and amassed millions of registered members despite the early Internet's restrictions.

With an estimated 85 million users worldwide in 2008, Friendster, which debuted in 2002, was the first social networking site to achieve major popularity.

[8] https://dictionary.cambridge.org/dictionary/english/social-media

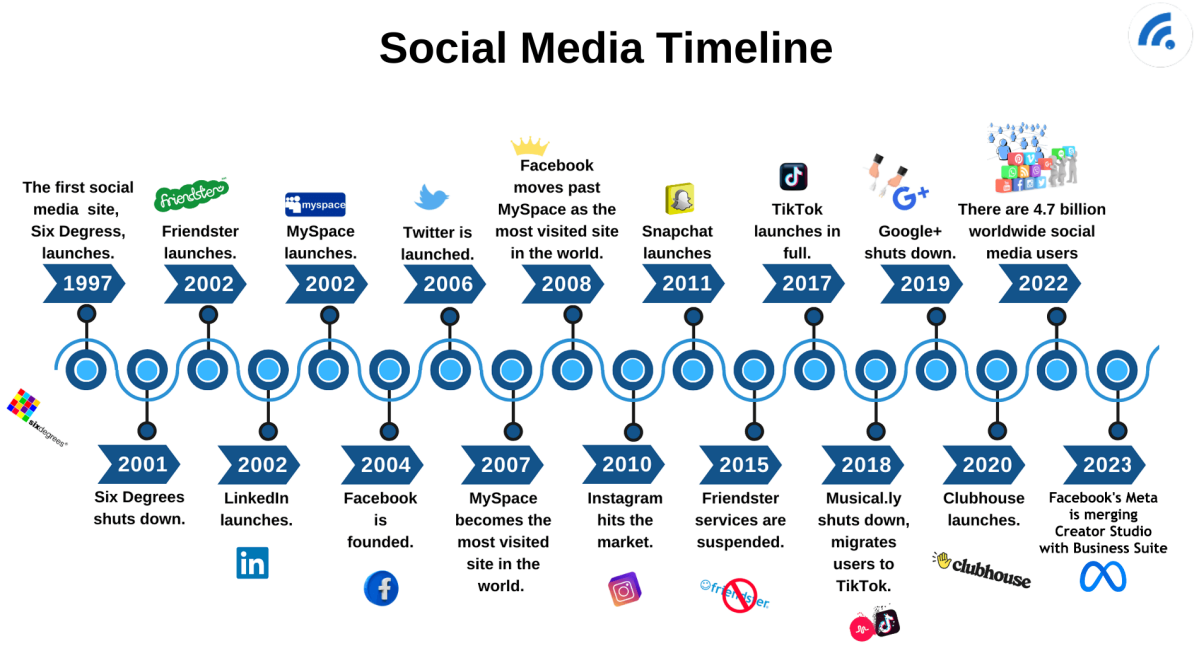


*Figure 2 - Social media timeline. Source: https://www.broadbandsearch.net/blog/complete-history-social-media*

### *4th Industrial revolution*

The Fourth Industrial Revolution, also known as Industry 4.0, is characterized by the integration of advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT), and big data into various industries. This integration is expected to bring significant changes to the way we live and work, and the media industry is no exception[9].

The 4th industrial revolution is and will continue to affect every aspect of media including how we consume it (super-fast, byte-sized chunks, pictures and video over text, second screening, etc.), the media we use (AI, chatbots, instant messaging, social media), and the images and messages we see (such as AI-generated advertising). Furthermore, Virtual and augmented reality (VR and AR) technologies are also going to affect the media sector. Such technologies will make it feasible to produce more immersive and interactive media experiences as well as new kinds of media content, such as VR and AR movies and games.

We have already started to see the rise of new types of media appearing, such as Immersive media. Immersive media is interactive, social, video game-like content delivered through

[9] https://revolution.edu.za/4th-industrial-revolution-in-the-media-industry/#:~:text=Revolution%20Media%20Academy%20Curriculum&text=In%20conclusion%2C%20the%20Fourth%20Industrial,reality%2C%20and%20new%20business%20models.

virtual worlds.[10] It is the result of the interaction between social media and video games, which produces alternate realities that enable users to create virtual selves in virtual worlds. It includes haptic gadgets, virtual worlds, VR, and ARas well as social video games. A great example is 'the metaverse', a network of interconnected virtual worlds where people can create and engage in a variety of activities and develop a virtual identity that is as complex and nuanced as their real-world identity, is also included.

Such type of new media is quickly capturing the new generation's attention, making social media lose its interest. They want not only to consume media but have a way to interact with it: to build friendships and connections in virtual worlds, express themselves, connect with like-minded people, and build communities around shared interests.

## 1.2 Types of media

### 1.2.1 Traditional vs digital media

Traditionally, we divide media into two types, the first one being traditional media, while the second is digital or new media. The former includes all the important media agents which existed before the Internet, such as newspapers, magazines, TV, radio, and billboards, while digital or new media includes digital media, social media, multimedia, and user-generated content.

Whereas traditional media is produced for a wide audience and designed to cast a broad net, new media tend to be designed for highly targeted online audiences. The internet and its algorithms enabled new media to precisely target specific niches and demographics. Traditional media proves to be highly effective in reaching the older population, as evidenced by numerous reports and surveys. People over the age of 50 spend significantly more time watching TV and reading newspapers compared to individuals in their 20s and 30s. Thus, younger generations are more likely to choose digital media.

Measuring the effectiveness of traditional media campaigns can be more challenging compared to digital media. While there are methods like brand trackers available, they lack the depth and intelligence provided by the tools utilised in digital media. Traditional media also lacks the direct interaction with consumers. Unlike social media, where you can engage and receive

[10] https://everyrealm.com/blog/education/evolution-of-media

immediate feedback from your audience, traditional media efforts may leave you relatively unaware of your audience's reactions to your messaging.

Most interestingly, anyone can create media thanks to new technologies and be a content creator. This undercuts the function of gatekeepers in the media. Anyone can now express their opinions online by using a social media site or YouTube channel. However, this also means that more disinformation and biased news can reach society every day with not a lot of social media tools in place to check the credibility of the information provided.

This also means that users can face information overload. In the digital domain, a significant challenge is the abundance of information that bombards us online. It might be tough to know where to begin or which information is truly valuable when navigating through the large pool of data. As a result, people could feel overwhelmed, which raises stress levels and makes it difficult to focus on what is really important.

The other threat posed by the digital realm is the potential breach of the user's privacy. We frequently have to provide personal information, such as our name, email address, and phone number, while registering for social media accounts or utilising particular programmes and apps. Unfortunately, this data can be used to follow our internet habits, send us individualized ads, or even be sold to outside companies. Such intrusions on our privacy can be upsetting and present serious hazards if our personal data ends up in the wrong hands.

Overall, the difference between the two types usually includes: [11]

- How much it cost: Traditional media is usually more expensive to produce than digital media.
- How many people it can reach: Digital media is easier to distribute and more accessible, as individuals can access it from any location and any device around the globe.
- How it's produced: Although traditional media is generally produced by large media organizations, new media is usually produced by small groups.
- How it's distributed: While traditional media is distributed via such channels as radio, television, and print media, new media is generally distributed online.
- How it's consumed: Typically, individuals consume traditional media passively, while they most often consume new media actively (ability to provide feedback).

11 https://www.techopedia.com/definition/1098/media#:~:text=Media%2C%20the%20plural%20of%20medium,%2C%20magazines%2C%20and%20the%20internet.

- How it's accessed: Generally, people access traditional media through broadcast or print, they usually access new media via digital channels.

| Aspect | New Media | Traditional Media |
|---|---|---|
| **Definition** | New media refers to digital platforms and technologies that facilitate communication, sharing, and dissemination of information. Examples of new media include social media, websites, blogs, podcasts, and online video platforms. | Traditional media encompasses non-digital communication channels, such as print (newspapers, magazines, books), broadcast (television, radio), and outdooradvertising (billboards, posters). |
| **Accessibility** | New media is highly accessible through smartphones, tablets, and computers with internet connectivity. | Traditional media is accessible through physical copies or devices, such as TVs and radios. |
| **Reach** | New media has a global reach and can connect people across borders instantly. | Traditional media has limited reach and is often confined to regional or national boundaries. |
| **Interactivity** | New media's greatest advantage is that it allows for high levels of interactivity, user-generated content, and real-time engagement, leading to an entirely new media culture. | Traditional media offers limited interactivity, primarily through letters to the editor or call-in radio shows. |
| **Targeting** | New media enables precise targeting of audiences based on interests, demographics, and online behaviour. | Traditional media targeting is less precise, relying on general audience demographics and interests. |

| Aspect | New Media | Traditional Media |
|---|---|---|
| **Speed** | New media is fast, with news, updates, and content spreading rapidly through sharing and virality. | Traditional media is slower, with information disseminated through scheduled broadcasts or print publications. |
| **Cost** | New media can be more cost-effective, with free or low-cost platforms available for content creation and distribution. | Traditional media often involves higher costs for production, distribution, and advertising. |
| **Analytics** | New media provides detailed analytics, helping content creators and advertisers track engagement, audience demographics, and other valuable insights. | Traditional media offers limited analytics, often based on surveys, circulation numbers, and viewer/listener ratings. |
| **Credibility** | New media can sometimes suffer from issues of credibility, with the spread of misinformation and "fake news." | Traditional media, while not immune to credibility issues, is generally perceived as more reliable due to established journalistic standards and practices as well as strong gatekeeping requirements. |
| **Lifespan** | New media content can have a short lifespan, with information quickly becoming outdated or overshadowed by new content. | Traditional media content can have a longer lifespan, particularly in print, where information can be preserved and revisited. |

*Figure 3- Traditional vs digital media. Comparative analysis by Chris Drew. Source: https://helpfulprofessor.com/traditional-media-examples/*

### 1.2.2 Traditional media

Let's take a look at some most common traditional media tools.

**Newspapers**

Newspapers are the most popular form of print media. They are generally delivered at home or are available at newsstands, shops, etc.. The majority of traditional newspapers are produced daily or once a week and their primary purpose is to generally inform the public about current events. Newspapers frequently include sports and entertainment articles, opinion pieces, and advertisements in addition to local, national, and worldwide news. This print medium may target a general audience, focus on a geographical area, or cover a specialized subject, such as newspapers for a specific profession, industry or interest. Newspapers traditionally are supported by selling advertising space as well as subscription or single-copy sales of the newspapers themselves. Throughout history, newspapers have been and still are sometimes subsidized by organisations or interest groups, including political parties. **Magazines**

Magazines, like newspapers, are periodical and are published regularly. Common schedules include weekly, biweekly, monthly, bimonthly, quarterly, or even annually.

Magazines provide detailed articles on various topics, like food, fashion, sports, finance, lifestyle, and so on. Magazines, like newspapers, can target a general audience, or focus on a specific group of people based on their gender, profession or hobbies.

Magazines, like newspapers, traditionally are supported by selling advertising space as well as subscription or single-copy sales.

**Banners/Posters**

Banners and posters are used to show slogans, logos, or certain messages. They can also be used for advertising products and services, as well as inviting people to various events, demonstrations, etc. The primary use of posters and banners can be seen in political campaigns.

The primary use of posters and banners can be seen in political campaigns. Both banners and posters are customised and include text as well as graphics in a huge size so that the message is seen from afar.

**Flyers/Leaflets**

Flyers/ Leaflets are handheld advertisements that are frequently distributed in public locations like bus stops and street corners. They could even be mailed straight to prospective clients.

Essentially, flyers and leaflets are printed documents with graphics and text that promote a particular idea, such as a message about a service, an occasion, or how to cast your vote in upcoming elections. They occasionally also give out coupons or discounts.

Flyers' and leaflets' objective is to create interest in the cause they are supporting and persuade others to take action, such as going to a website or an event.

**Books**

The oldest type of print media still in use as a communication and informational tool is the book. They provide authors with the chance to educate the entire world about a certain subject. They offer a wide range of themes, such as literature, history, fiction stories, and many more, that not only broaden our education but also amuse us.

**Television**

The television industry has historically provided broadcast media. For a very long period, television has maintained its high level of popularity. The first broadcast took place in 1928, but before colour television was introduced in the late 1960s, black and white television became a common fixture in homes during the 1950s. From the 1990s onward, more recent innovations like satellite and digital television introduced a variety of programs in high-definition quality.

The emergence of the internet has significantly impacted how television is consumed. Nowadays, viewers have the flexibility to watch TV programs in real-time through broadcast channels, at a later time using digital video recorders, or on a wide range of devices via video streaming.

**Radio**

Radio stations are still a popular form of media. For example, BBC Radio 1 has over 8 million regular listeners.

Through the airwaves, radio stations transmit audio programming to their listeners. This can include songs, discussion shows, traffic updates, sports results, etc. Radio is a highly cost-

effective form of traditional media that offers a wide reach. People listen to their favourite stations while driving, working, or even relaxing at home.

Radio is not only used to play songs but also to catch listeners' attention, promote a service or product, invite listeners to events, or discuss hot topics in society.

**Billboards**

A billboard is a sizable outdoor advertising structure that is frequently seen in crowded places, such as next to busy roads. Large ads are shown on billboards for cars and pedestrians to see. Typically, businesses utilise billboards to promote new items or to strengthen their existing brands and events. However, not all billboards are used for advertising products and services: non-profit groups and government agencies use them to communicate with the public. For instance, the government can use billboards to emphasise safe driving rules. Some examples can be found below.


*Figure 4 - A safe driving campaign by Colorado State Patrol. Source: https://movia.media/moving-billboard-blog/government-spreads-the-word-through-ooh/*


*Figure 5 - Example of British government using billboards to prepare society for Brexit. Source: https://movia.media/moving-billboard-blog/government-spreads-the-word-through-ooh/*

### 1.2.3 Digital media

Digital media, usually referred to as new media, refers to the online counterparts of conventional media such as television and radio. Considering the ongoing changes in technology, it is impossible to ignore the impact digital media has on our way of life. It can be consumed in the form of audio, visual, and video content and transforms how we regularly engage with one another educate and amuse ourselves.

Anytime we use a computer, tablet or cell phone, opening web-based systems, and apps, we are consuming digital media. For instance, podcasts, streaming music and video services, online newspapers, interactive games, and other programs that can be used on various devices can be categorised as digital media. In terms of when they can access the material, digital media outlets give users much more flexibility than traditional media channels like newspapers and TV networks. Due to technical advancements, digital media outlets are also simpler to produce.

These days, most types of digital media fit into one of these main subgroups[12]:

- AUDIO: Podcasts, audiobooks, and digital radio stations are examples of audio forms of digital media. Numerous digital radio services including Apple Music, Spotify, Pandora, and others have hundreds of millions of subscribers and offer a wide selection of musical stations as well as on-demand access to databases containing millions of songs.
- VIDEO: A lot of digital media is visual, ranging from virtual reality surgical simulators used in hospitals to streaming television and movie services like Netflix. YouTube, which houses billions of videos, is one of the most important actors in the visual digital media industry. Since its foundation in 2005, it has become one of the most well-liked websites.
- SOCIAL MEDIA: Social media includes sites like Twitter, Facebook, Instagram, LinkedIn, Tik Tok, and Snapchat, which allow their users to communicate with one another through text posts, photographs, and videos, leaving 'likes' and comments to start conversations about pop culture, sports, news, politics, and the everyday occurrences in their lives.

[12] https://online.maryville.edu/blog/what-is-digital-media/#:~:text=Unlike%20traditional%20media%2C%20digital%20media,graphics%2C%20text%2C%20and%20more.

- ADVERTISING: With the help of marketing partnerships and available advertising space, advertisers have adapted to the world of digital media. The prevalence of pop-up and autoplay advertisements, which cluttered early websites and deter visitors, has decreased on the internet. Instead, advertisers resorted to original content and other strategies to maintain consumer interest without overselling their goods.
- NEWS, LITERATURE, AND MORE: Traditionally, people read books, print newspapers, periodicals, and other written works. The demand for certain kinds of reading experiences has persisted even though digital media has become widely available. A lot of newspapers have moved their activities online and there has occurred a rise in exclusively online news channels. Furthermore, the rise of e-readers like the Kindle, the popularity of Wikipedia, and the profusion of literary websites are all examples of how important written material continues to be in digital media.

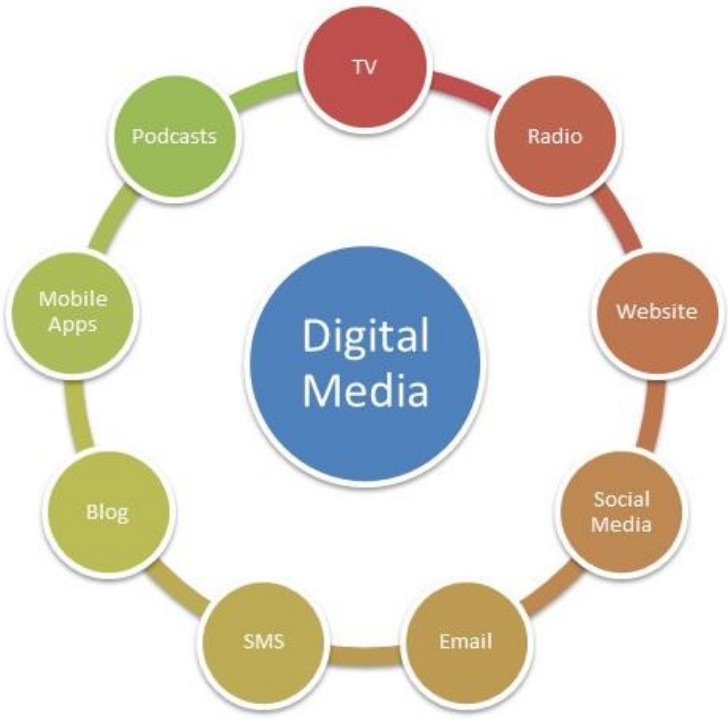


*Figure 6 - Digital Media. Source: [https://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/17895-digital-media.html](https://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/17895-digital-media.html)*

Some of the most valuable corporations in the world belong to the tech sector as the digital world has dominated the contemporary corporate landscape. Many of these businesses have various divisions and interests, including various forms of digital media and associated businesses. As a result, the biggest companies around the world are among the top digital media companies. Some of the best-known examples are:

- **Google** was founded in 1998 by Larry Page and Sergey Brin. It started as a revolutionary new search engine, which spurred the growth of one of the world's most valuable brands (Google's Net Worth is $1359 billion in 2023). With the development of its web browser (Chrome), Chromebooks, smart eyewear, and Chromecast online television streaming, Google has grown into a sizable, global technological corporation.
- **Netflix** launched in 1997 as an online-based movie rental service, where people could order DVDs and have them delivered to their homes. Customers created a list of movies they wanted to see, and Netflix shipped them DVDs from that list. Users could keep DVDs for as long as they want, and upon returning one, they would be sent the next title on their list. Since then, Netflix has developed from a third-party movie distributor to a global leader in online streaming, with over 692.10 million viewers globally. According to projections, there will be an additional 32.9 million viewers in 2024.
- Apple has evolved from a little computer firm with sophisticated marketing to one of the world's most powerful forces in technology. Apple was founded in 1976 by Steve Jobs and Steve Wozniak. Apple surged to the top of the gadget industry with the release of the iMac in 1998 and the iPod three years later, both of which were promoted using Jobs's creative techniques to generate interest and demand. Since then, Apple has remained successful thanks to the released items like the iPhone, iPad, and Apple Watch. Each day, millions of Americans use Apple products like iTunes to consume digital media.
- **Facebook** and **YouTube** are two of the biggest social media websites. **Instagram**, **Twitter**, **Snapchat**, and **TikTok** also have substantial user bases – each around 3 billion users. These brands are owned by well-known companies. As an illustration, Facebook is the owner of WhatsApp and Instagram. Google also owns a number of websites, including YouTube. The number of users on these platforms will probably continue to rise as social media-using generations age and new users are born.
- **Amazon** continues to be a leader in online shopping and has a sizable following in the digital media industry. According to Investopedia, the company is actually among the biggest in the world by market value. The corporation has a significant online presence, offering everything from personal assistants, cloud computing, and digital advertising to Amazon Prime and its related streaming service. Digital media's characteristics are quite diverse as well as traditional media.

In the following, some of the most common traditional media tools are described.

*Email*

Electronic mail or 'email' is a quick way of sending messages to people anywhere in the world using IT devices. You send an email to another person's email address. You can also send an attachment, for example, a file or photos with your message.

There are 4 billion daily email users, and that number is assumed to increase to 4.6 billion by 2025. More than 306 billion emails are sent and received every day. While many people complain about email volume, Spam, and email marketing, people still read emails. According to a Bluecore survey, 72 % of Gen X, 64 % of Millennials, and 60 % of Gen Z consider email the most personal channel to receive brand communications. Consequently, across all generations, there is a high degree of affinity to email as a trusted communication source.[13]

Indeed, most of the time, we use email to contact a colleague or to inquire about a service. But using the email system's media is also popular among companies organisations and entrepreneurs to promote their products and services to potential customers, share information about their activities, invite them to take part in various events, etc.. A lot of charitable organisations also use email to inform about their activities, gather supporters, and encourage donations.

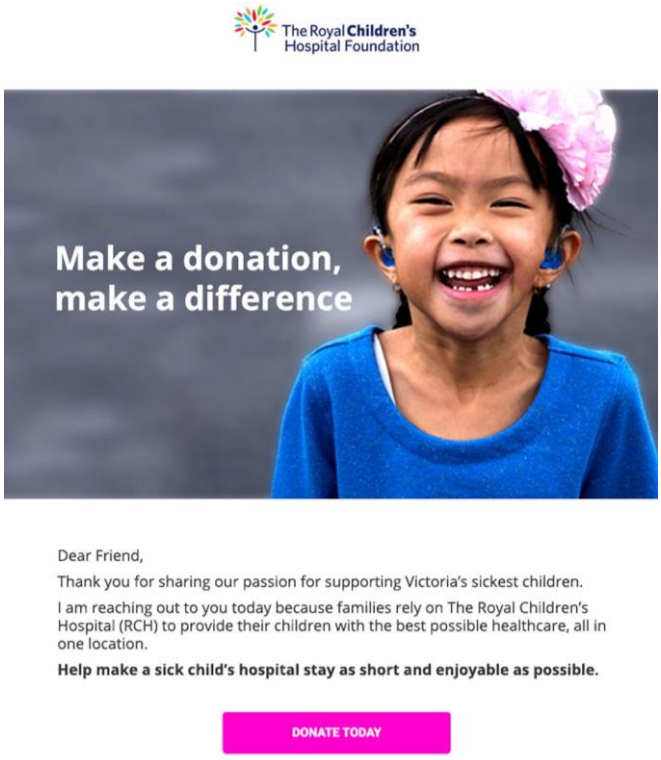


*Figure 7 - Example of email campaign used by charitable organisations. Source: https://www.campaignmonitor.com/resources/knowledge-base/what-is-the-most-important-part-of-an-email/*

[13] https://developermedia.com/why-email-marketing-is-more-effective-in-reaching-developers/

**Podcasts**

By definition, podcasts are *"digital audio files made available on the Internet for downloading to a computer or mobile device, typically available as a series, new instalments of which can be received by subscribers automatically".*

To put it simply, a podcast is a series of episodes in audio format stored in a podcast hosting platform. Podcasts can be divided into "seasons" like a TV show or be episodic and ongoing. A weekly release for new episodes is the most typical, but there are also daily podcasts, weekly podcasts, etc. There are many different types of podcasts, but the most popular ones are solo, interview, conversational, educational, non-fictional storytelling, and news podcasts as well as podcast theatre.

Podcasting began as a largely independent means for individuals to spread their message and create a network of people who share their interests. Nowadays, many big and small companies, radio networks, comedians and storytellers, radio networks, churches, and individuals produce their podcasts.

Podcasting is that it is relatively easy and cheap to produce, and the popularity of podcasts is growing every day.

*Websites and Blogs*

Blogging and building websites were one of the first ways the Internet was used to revolutionise media production and consumption. One of the greatest advantages of this new media is the possibility to publish one's blogs and information to the globe.

There are countless different types of websites, such as e-commerce sites, news sites, forums, and educational ones. Web pages typically contain both text and other types of media.

A website usually serves as a platform for organisations to showcase their content to consumers – promote their services, products and activities, offer information and support, allow users to contact them as well as gather followers and support.

Blogs are a sort of website that can be run by an individual or a small group of people. Blogs are composed of individual posts on more specific subjects within the blog's field of expertise. They can cover a wide range of subjects, including fashion, music, travel, and fitness.

Professional blogging has recently grown in popularity as a means of internet income. It is worth mentioning, that blogs usually present personal experience and expertise, thus it may likely include and showcase biased opinions.

**Social media**

Social media is a collective term for websites and applications that focus on communication, community-based input, interaction, content-sharing and collaboration. In other words, social media is any digital technology that allows users to instantly generate and share information with the public. Thus, social media is a powerful communications medium, with widespread influence over cities as well as remote areas.

However, the terminology surrounding social media often overlaps with that of social networks. In reality, the concept of a social network existed long before the internet era, referring to a group of individuals who share some form of connection or familiarity. Presently, the terms 'social networking site' or 'social networking service' may seem somewhat outdated, but they essentially encompass the same functionalities as 'social media'. As social media has become an integral part of mainstream media, its precise definition remains challenging due to the presence of exceptions that defy categorization. What sets it apart is its interactive nature, facilitating two-way communication. Social media encompasses platforms designed for social networking purposes.

There are many different types of social media, and they provide a wide range of services; the categories and examples of a few of them are shown below:

| Type | Social Media Platforms | Purpose |
|---|---|---|
| Audio Platforms | Clubhouse, Twitter Spaces, Spotify | Listen to live conversations on specific topics |
| Video Platforms | YouTube, TikTok, Instagram Stories and Reels, Facebook Watch | Watch videos in short and long formats |
| Disappearing Content | Snapchat, Instagram Stories, Facebook Stories, LinkedIn Stories | Send short messages privately and publish conveniently, at-the-moment content for all your followers that lasts for 24 hours |

| | | |
|---|---|---|
| Discussion Forums | Reddit, Quora | Debate and discuss, network, form communities around a subject, and share views on internet-driven topics |
| Shoppable Social Media Platforms | Pinterest Product Pins, Facebook Shops, Instagram Shops, TikTok, Shopify, Douyin, Taobao | Research and purchase products directly from companies through social media platforms |
| Live Streams | Twitch, YouTube, Instagram Live Rooms, Facebook Live, TikTok | Broadcast live video to viewers. This ranges from a person broadcasting what they're doing on the screen to ethically organised conferences with numerous speakers |
| Business Platforms | LinkedIn, Twitter | Collaborate with professionals in your niche or with potential clients |
| Closed/ Private Community Platforms | Discourse, Slack, Facebook Groups | Forming communities, possibly you should register or other screening measures for new members. |
| Inspirational Platforms | Pinterest, YouTube, Instagram, blogs | Surf for information and find inspiration for anything from food to travel to shopping and more |

*Figure 8 - Types of social media. Source: https://www.nfi.edu/what-is-social-media/*

Social media empowers users to generate and exchange information, ideas, messages, and content through various social networking websites and applications. On social media, organisations are allowed to engage in direct conversations with their followers as well as attract new followers. Organic content, comprising written, graphic, or video posts shared on social media without paid advertising, holds the potential to reach a substantial audience. Government bodies also employ social media to communicate with the public to raise public awareness about any topic through social media.

Social media and online communication have brought information to people and audiences that previously could not be reached. Thereby, the awareness among people about what is happening in other parts of the world in real-time.

On the other hand, social media stands out because it is both wide and relatively unrestrained. There are significantly fewer limits on what people can publish on social media than on more conventional forms of mass media like newspapers, radio stations, and television, even if many

social media companies do impose certain restrictions, such as eliminating images that portray violence or nudity.

**Virtual and Augmented Reality**

Augmented Reality (AR) and Virtual Reality (VR) technologies are making their way into many aspects of our lives. While Virtual and Augmented Reality were initially particularly popular in the gaming industry, they can now also be found elsewhere. Those technologies seem to bring tremendous benefits to various domains such as entertainment, education, and news industries among many more.

AR and VR technologies provide immersive experiences to users, making them feel like they are part of the action. For instance, the audience can be drawn deeper into the news content and experience the news story in the first person. Using VR and AR technologies has the potential to increase one's capacity for empathy for things happening in far-off places in the world. In other words, AR and VR are technologies are capable of evoking emotions and closeness to the message or story being conveyed. They also can exert pressure and compel people to go beyond their comfort zones.

## 1.3 Different roles of media in society

The roles that the media play in society best describe them. Through news, features, and commentary in the press, they instruct, inform, and amuse readers. Additionally, they create dramas, documentaries, current affairs show, PSAs, magazine shows, and other types of radio and television programming. The media serve as a channel for bringing voices, perspectives, and lifestyles into the public eye.

The media plays a key role in promoting social change and forming people's opinions and attitudes. The media can highlight important changes that have an impact on people's lives both badly and positively through its reporting, as well as through bringing to light concerns that are frequently disregarded and voices that are marginalized. The agenda-setting role of the media frequently affects societal discourse, thinking, and priorities.

Moreover, the mass media also provides entertainment to its audience. Some of the well-liked entertainment media that have a significant impact on forming cultural norms and values are music, television, and movies. People can learn about various cultures, ways of life, and beliefs through entertainment media, which can support tolerance and diversity. Escapism can be achieved through entertainment media, which enables people to unwind and have fun while taking a break from their regular life.

The media also have a crucial role in education. Documentaries, newscasts, and online resources in the media offer educational material on a variety of subjects, including science, history, and politics. For those who may not have access to traditional educational institutions like schools and universities, the media can be a significant source of information.

The watchdog position, however, is arguably one of the most significant tasks done by the media in contemporary democracies. Media keeps an eye on how governments are performing and acting to make sure they are keeping the promises and expectations of the people who elected them. As a result, this function frequently serves as a point of contention between the media, the government, and its institutions.

On the other hand, some critics argue that the media can promote false or misleading information, which can have negative consequences like harmful stereotypes and biases causing discrimination and social inequality. Research and data collected have demonstrated how the media can particularly perpetuate gender, religious, and cultural stereotypes. For example,

while men are frequently shown as strong, resourceful leaders and in other positions associated with authority, women are frequently depicted in their traditional roles as wives, mothers, and caregivers.

The ability of media to carry out its main functions depends on many variables, largely on political and legal environments in any country. For example, there are many media organisations and products, a variety of viewpoints, and easy access to information where the legal environment is favourable. In situations when the legal system is restrictive, there is a dearth of diverse media, bias, and overt political meddling.

Media operations are also influenced by media ownership. There are typically three types of media organisations: private, public, and state. The bulk of the time, media companies run according to the needs of their owners. Privately held media are frequently influenced by business and market factors.

To summarise, the media play a crucial role in society by providing information, news, entertainment, advertisement, and education to a large audience. The media has a significant influence on shaping public opinion, attitudes, and behaviours and can also function as a monitoring apparatus to hold those in power accountable. The influence of the media on society, however, is not without controversy, and to ensure the media's beneficial influence on society, it is essential to promote responsible and ethical media practices as well as take any information provided with a grain of salt. It is necessary to educate society to think critically while consuming information to identify fake news and propaganda.

## 1.4 How Propaganda shaped our history – The Philosophy of the Media Mindset

### 1.4.1 History of propaganda

If we think about media, there are some cases when we immediately think about fake news and propaganda, especially in the 21st century.

Although nowadays we have access to news in real-time from a variety of media sources and tools, the most recent technology also enables manipulation and fake news, making them look so professional and real that many individuals are unable to distinguish between accurate and fake information.

*"Repeat a lie often enough and it becomes the truth"*, is a law of propaganda often attributed to the Nazi Joseph Goebbels.

Repetition indeed does make a fact seem more accurate, regardless of whether it is or not. Among psychologists, this phenomenon is known as the "illusion of truth" effect. In media, we refer to this type of repeated message and information manipulation as "propaganda." Propaganda is a term that is frequently used in the media nowadays, yet it is not a new concept. Emperors and governments have utilised it many times throughout history to support their beliefs and deeds.

To understand how propaganda has shaped and continues to shape our societies and lives, let's start with building an understanding of what propaganda is. Here are several definitions:

*"Propaganda - information, ideas, opinions, or images, often only giving one part of an argument, that are broadcast, published, or in some other way spread with the intention of influencing people's opinions*" [14]

*"Propaganda - information or ideas that are spread by an organized group or government to influence people's opinions, esp. by not giving all the facts or by secretly emphasizing only one way of looking at the facts."* [15]

[14] https://dictionary.cambridge.org/dictionary/english/propaganda
[15] https://dictionary.cambridge.org/dictionary/english/propaganda

*"Propaganda -propaganda, dissemination of information—facts, arguments, rumours, half-truths, or lies—to influence public opinion."*[16]

The terms 'propaganda', 'misinformation' and 'fake news' often overlap in meaning. They are used to refer to a range of ways in which sharing information causes harm, intentionally or unintentionally – usually in relation to the promotion of a particular moral or political cause or point of view.

It is possible to distinguish between three different uses of information which fall into this category:

- **Mis-information** - false information shared with no intention of causing harm
- **Dis-information** - false information shared intentionally to cause harm
- **Mal-information** - true information shared intentionally to cause harm.

All of these phenomena are not new, but recently, with the widespread use of advanced information and communication technology, they have acquired a new significance.

To summarise, propaganda is the more or less systematic effort to manipulate other people's beliefs, attitudes, or actions by spreading false, inaccurate or one-sided information, ideas, opinions or images.

Propagandists possess specific objectives or a defined set of goals they aim to accomplish. They deliberately select particular facts, ideas, and symbols and present them in ways they believe will have the most impact in order to accomplish these goals. In order to be as effective as possible, they may selectively omit or distort essential information, turn to fabrications, and use strategies to draw the target audience's focus away from everything but their own propaganda. As a result, it can be quite difficult to determine if a piece of new information is accurate or not.

Organisations as well as individuals can create propaganda for a variety of reasons, mainly to promote a specific cause, philosophy, group, or person. That's what sets propaganda apart from expressing a personal opinion or even a divisive idea. The desire to have a bigger influence fuels propaganda.

Propaganda and education can also be distinguished by their comparative deliberateness in selection and manipulation. Teachers work hard to provide all sides of a topic, including the reasons to believe and to reject the claims they make as well as the benefits and drawbacks of

[16] https://www.britannica.com/topic/propaganda

each potential course of action. By teaching students the necessary critical thinking skills education encourages them to gather and assess their own evidence and then make a decision on what to believe in.

Propaganda also stands apart from casual conversation or open dialogue through its intentional nature and a distinct focus on manipulation.

While we may think that propaganda was since the 20th century when mass media emerged and evolved, in reality, it began much earlier. Propaganda has been with us for a long time, since ancient Greece, to be precise. In 480 BCE, Themistocles, a renowned Greek commander, employed a strategic disinformation campaign to entice Xerxes, the Persian ruler, into a naval confrontation at the Straits of Salamis. The strait's narrow width[17] posed a challenge for the expansive Persian fleet, limiting their manoeuvrability. This advantage played a crucial role in enabling the outnumbered Greeks to secure a victory over Xerxes and his forces.

Another good example of ancient propaganda is when the Vatican responded to Martin Luther's reformation attempts by launching a strategic communication campaign during the Counter-Reformation. The primary objective was to strengthen the Catholic Church's authority, and the campaign proved to be highly effective in achieving this goal.

There are several examples from earlier history, however, modern propaganda did start in the last century and was particularly developed during both world wars.

Global propaganda was used throughout both World Wars. These wars involved entire nations, rather than simply professional armies engaged in lethal conflict. During these wars, propaganda was used to incite resentment against the enemy, persuade the population that the cause was justified, recruit new soldiers, enlist the active support and collaboration of neutral nations, and strengthen the support of allies during these wars.

Numerous propaganda posters and news from World War I and World War II such as the ones below appeared during that time:

[17] Strait is a narrow passage of water connecting two seas or two other large areas of water.

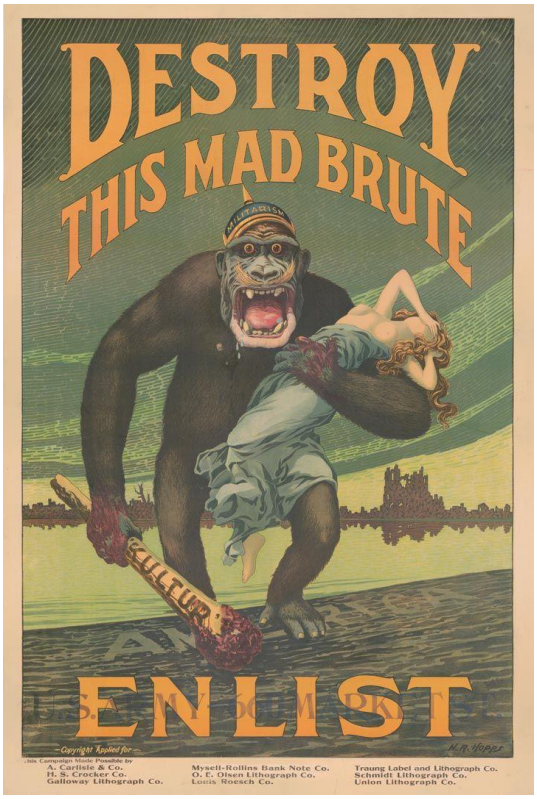


*Figure 9 - Propaganda poster during world war I. Source: https://www.metmuseum.org/*


*Figure 10 - "Uncle Sam calls" propaganda poster during World War I and II. Source: https://en.wikipedia.org/*

During both World Wars, all participating powers and states tried to reach the citizens of their own countries to manipulate and involve them in the war as well as gather supporters from other nations. By examining the posters of the wars in the last century, we can see that there was "positive" and "negative" propaganda. For positive propaganda, Uncle Sam's "I Want You for US Army" (figure 10) is a well-known example. The visuals depicted the favourable aspects of war, aiming to bolster the war endeavour by showcasing courageous, reliable, and humble soldiers on the frontline, as well as portraying peaceful and virtuous families within the homeland. These images aimed to generate empathy for the war's cause and present it in a less harrowing light. Furthermore, patriotism and nationalism were employed as tools to advance specific political agendas.

For the side of negative propaganda, a poster from World War I (figure 9) is a perfect example. These and similar images were strategically employed to dehumanize the enemy and provoke hostility towards them. The goal was to portray the competing countries as dangerous enemies, but not to the point of intimidation. The enemy was portrayed as deadly and scary, as well as weak and incompetent at the same time.

Unfortunately, the 21st century is no exception when it comes to war propaganda. The war between Ukraine and Russia has sparked a new wave of war propaganda. Besides the new propaganda techniques made available by new technologies, posters are also used for the same reasons - incite resentment against the enemy, persuade the population that the cause was justified, and invite people to enlist in the army. Many of the aggrandised narratives put out between 1914 and 1919 are still deployed now. Some examples of the "positive" propaganda romanticizing and glorifying showing courageous soldiers, can be seen below:


*Figure 11 - Russian propaganda posters in 2022. Source: https://cepa.org/*

However, though keeping some of its techniques and tools as we can see above, propaganda has greatly evolved in the 21st century. This is mainly due to digitalisation, new digital technologies and digital media available. In the 21st century, propaganda is largely disseminated through the news, the Internet, and social media platforms. Modern propaganda can take many forms, ranging from mainstream memes to partisan news.

Nowadays, traditional forms of propaganda such as posters, leaflets, and radio broadcasts have been superseded by digital visuals that can be rapidly created, carry strong political messages, and easily spread across various platforms, often taking the form of memes. These digital artefacts possess the potential to inflict greater harm compared to their poster counterparts from years ago. Political memes, which are frequently shared by individuals within your family network on platforms like Facebook, Instagram, etc. are designed to manipulate the thoughts and subconscious of viewers while dehumanising those who hold opposing views. In some

instances, these memes may disseminate false information or misleading statistics in order to advance their respective causes.[18]

Digital media and memes actually can be more dangerous than the propaganda of traditional media. The danger associated with memes comes from their decentralised nature as they are no longer directed or managed by a single figure (a person or authority) with the aim of promoting the public interest. Memes can be shared extensively by anybody and spread quickly in real-time, having the potential to go viral through mass resharing.

Propaganda also spread in terms of the areas it is used. It is not only about war and politics anymore. The World Health Organisation used the term "infodemic" to characterize the deluge of information that people had to filter through in order to make decisions about their health and safety during the coronavirus pandemic. Propaganda can be found in entertainment, education, and the management of public opinion, where ideas about moral character and ethical values become embedded into the fabric of culture.[19]

Some examples of memes used for "infodemic" propaganda can be seen below.


*Figure 12 - Propaganda memes about COVID-19. Author: unknown*

Many people today are working to create effective propaganda. It is used by political leaders all around the world to sway public opinion. Politicians, government officials, and leaders of other nations have all been denigrated using conspiracies and lies. Propagandists occasionally utilize rage or outrage to draw attention. Other times, they repeat uncomplicated slogans until they turn into memorable clichés. Others employ more advanced methods. Online manipulation efforts that deceive journalists into publishing false information can be attributed to the skills

[19] https://www.porchlightbooks.com/blog/changethis/2020/propaganda-education

of disinformation specialists. Some propagandists even establish think tanks to increase their credibility by generating studies that promote their favoured viewpoint.

Thus, there has never been a more crucial time to educate ourselves about modern propaganda. New digital forms of propaganda are influencing both the public and policymakers, as bots amplify certain ideas to create an illusion of popularity and trolls attack people with the goal of silencing or marginalising ideas they hate. Through the use of machine learning and personalisation algorithms, propaganda is a lucrative industry. Digital platforms make it simpler than ever to deploy tactics like sentiment analysis, where propagandists may recognise, assess, and react to people's emotional expressions in routine online encounters. Thus, it is crucial to understand the different techniques and tactics used to be able to recognise propaganda.

### 1.4.2 Techniques of Propaganda

Propaganda creators tailor their information using persuasive techniques to make it more memorable and believable. These strategies may occasionally be based on the truth, but they may also omit or change the facts in order to forward their ultimate goals.

In 1939, social scientists Alfred and Elizabeth Lee first classified propaganda as a collection of seven commonly used techniques in their book “The Fine Art of Propaganda”. Those seven techniques were defined as name-calling, glittering generalities, transfer, testimonial, plain-folk, card-stacking, and bandwagon. Later, the list of propaganda techniques grew. You can find the main techniques below[20]:

**Name-calling:** Name-calling involves using derogatory terms to describe an opponent or enemy. It is a tactic employed to discredit and demean individuals or groups by resorting to insults rather than engaging in substantive arguments or discussions.

**Appealing to emotions:** Propaganda often relies on emotional appeals to influence people's opinions. By appealing to fear, anger, compassion, or other emotions, propagandists aim to create a strong emotional response that can override critical thinking and rational judgment. These appeals manipulate individuals' feelings to sway their support or opposition toward a particular cause or idea.

**Bandwagoning:** Bandwagoning is a technique that uses peer pressure to convince people to do something. The propagandist creates an impression that "everyone is doing it" or

[20] https://www.verywellmind.com/how-does-propaganda-work-5224974

that a majority supports a certain viewpoint or action. This strategy aims to exploit individuals' desire to conform and be part of the perceived majority, influencing them to align with popular opinion.

**Scare tactics:** Scare tactics are used to frighten people into supporting a particular cause or taking a specific action. By emphasizing potential threats, dangers, or dire consequences, propagandists aim to instil fear and anxiety, motivating individuals to support their agenda or comply with their demands.

**Manipulating Information:** Manipulating information involves distorting or misrepresenting the facts to influence people's opinions. Propagandists selectively choose and present information in a biased manner that aligns with their desired narrative. By manipulating facts, statistics, or events, they seek to shape public perception and control the narrative surrounding an issue or situation.

**Using False Statistics:** Using false or misleading statistics is a common propaganda technique. Statistics are intentionally misrepresented or fabricated to deceive the audience and bolster the propagandist's argument. By presenting inaccurate data, propagandists aim to manipulate public perception and sway opinions in their favour.

**Making Unrealistic Promises:** Making unrealistic promises is another common technique used in propaganda. Propagandists appeal to people's aspirations and desires by offering grandiose pledges or guarantees. However, these promises are often impractical or impossible to fulfil, serving as mere rhetorical devices to win support or gain trust.

**Using Symbols:** Symbols are often used in propaganda to represent an idea or concept. By employing powerful symbols, such as flags, icons, or gestures, propagandists tap into existing emotions and associations to evoke a desired response. Symbols can be potent tools for conveying messages and rallying support behind a cause or leader.

**Slogans:** Slogans are short, catchy phrases that are used to summarize an idea or concept. They are designed to be memorable and easily repeated, serving as effective tools for spreading propaganda messages. Slogans aim to encapsulate the essence of a campaign or ideology, creating a simple and compelling rallying cry for supporters.

**Plain Folks:** The plain folks' appeal is a technique that uses average, everyday people to endorse a product, candidate, or idea. By featuring relatable individuals in propaganda materials, such as commercials or testimonials, propagandists aim to establish a sense of trust

and familiarity. The intention is to convince the audience that the promoted cause or person aligns with the values and interests of ordinary citizens.

**Testimonials:** Testimonials are endorsements from famous or respected people. By leveraging the influence and credibility of well-known figures, propagandists seek to sway public opinion and gain trust for their cause or product. Testimonials can range from celebrity endorsements to expert opinions, adding a persuasive element to the propaganda message.

**Transfer:** The transfer is a technique that uses positive associations to make an object or person seem more favourable. By linking a desired concept or attribute to something or someone already held in high regard, propagandists aim to transfer the positive feelings associated with the existing entity to the promoted cause or individual. This technique leverages existing positive emotions or associations to enhance the appeal of the propaganda message.

**Card Stacking:** Card stacking is a technique that only presents information that is favourable to the person or thing being promoted. It involves selectively highlighting positive aspects, achievements, or testimonials while deliberately omitting or downplaying any negative information. This one-sided presentation distorts the overall picture and manipulates public perception in favour of the propagandist's agenda.

**Glittering Generalities:** Glittering generalities are words or phrases that have a positive connotation but don't have a specific meaning or substance. They are vague and emotionally appealing terms that are designed to evoke positive emotions without providing clear definitions or explanations. Glittering generalities aim to create a favourable impression without addressing the substantive issues or arguments at hand.

**Stereotyping:** Stereotyping is a technique that uses oversimplified and often inaccurate stereotypes to describe an opponent or enemy. Propagandists employ preconceived notions and generalizations about certain groups or individuals to create negative perceptions. By painting a broad stroke, they seek to demonise or discredit the opposing side, appealing to existing biases and prejudices.

**Snob Appeal:** Snob appeal is a technique that uses the idea of exclusivity to make something seem more desirable. By creating an impression of superiority or luxury, propagandists aim to attract individuals who aspire to be part of an elite or exclusive group. Snob appeal seeks to associate a product, idea, or candidate with prestige and desirability, making it more attractive to certain segments of the population.

**Loaded Language:** Loaded language is a language that is loaded with emotion or meaning. It involves using words, phrases, or slogans that carry strong emotional connotations to influence the audience's perception and response. The loaded language aims to evoke specific emotions or reactions and can be used to manipulate public opinion by framing issues in a particular light.

**Weasel Words:** Weasel words are words or phrases designed to mislead or deceive people. They are intentionally ambiguous, vague, or misleading, allowing the speaker or writer to make claims or statements while maintaining plausible deniability or avoiding direct responsibility. Weasel words create an illusion of credibility or certainty while obscuring the actual meaning or intent behind the message.

These propaganda techniques are commonly used to shape public opinion, influence decision-making, and manipulate perceptions. Recognising these tactics can help individuals become more critical consumers of information and make informed judgments based on objective analysis.

### 1.4.3 Positive manipulation

Speaking of propaganda, the thoughts go immediately to manipulation. The latter usually causes negative associations with people. However, manipulation can be a positive tool as well if used for a good purpose. There is a psychological instrument / technique called ’Nudge’ which is a strategy rooted in the behavioural science that employs subtle interventions to assist individuals in making improved choices. Nudge’s theory proposes that consumer behaviour can be influenced through gentle prompts and positive reinforcements. Advocates of the nudge theory propose that strategically placed "nudges" can mitigate market failures, yield cost savings for the government, promote desirable behaviours, and enhance the efficient utilisation of resources. However, critics argue that nudges can be subject to misuse and may evolve into a form of social engineering or a means to entice consumers into purchasing unnecessary goods.

In the pictures below, we can see some interesting examples of nudges, which can be helpful for society:


*Figure 13 - Examples of "nudges". Source: [https://blog.vantagecircle.com/nudge-theory/](https://blog.vantagecircle.com/nudge-theory/)*

The images above are good examples to manipulate and control society in a good way. Hereby, we can see that manipulation processes can also be used to impact people's behaviour and help them to make improved choices, e.g., forming healthier habits.

Overall, in this day and age, it is impossible to avoid propaganda. This is why, it is essential to practice critical thinking to be able to analyse information and consider its reliability, motivation, and source. It is also crucial to approach news consumption strategically in this age of information overload and to avoid taking everything at face value. By adopting a sceptical mindset and being diligent in our fact-checking endeavours, we can better equip ourselves to navigate through the sea of misinformation that permeates our digital world.

## 1.5 From pyramids to Facebook – Alternative history

### 1.5.1 Alternative history: the dangerous byproduct of fake news and facts

False and misrepresented news reports are nothing new. Since the development of the printing press, it has been a part of media history for a very long time before the emerge of social media. Those news reports drive tabloid sales. By attempting to shock and astound us, headlines known as clickbait on the internet persuade readers to click in order to read more.

The effects of fake news and data are quite real. The news media has the capacity to sway our politics, our governments, and the future policies we adopt using inaccurate or deliberately misleading information. However, over time, knowledge of the past has the capacity to shape our identities, nations, institutions, and perspectives on other people. Every effort to battle "fake news" must be matched by an equal or even stronger effort to combat "fake or alternative history"[21].

Besides fake stories, fake news has evolved into a more serious problem, encompassing the spread of misinformation about historical events and creating alternative or fake history. A long-term phenomenon known as "fake history" has been manifesting itself in front of our eyes. The "real history" that contradicts "fake history" has progressively faded from public view, in contrast to the "real news" that confronts "fake news" every day in the public realm.

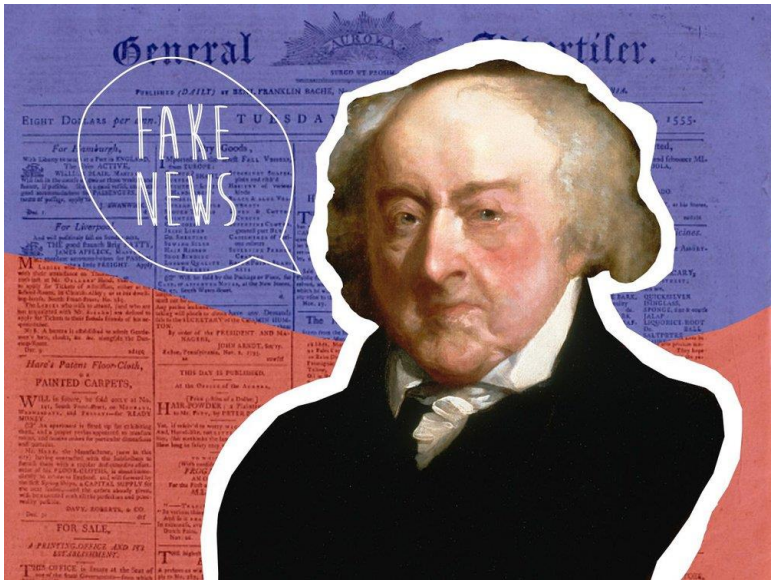


*Figure 14 - Fake news. Source: Smithsonian.com*

[21] https://www.fpri.org/article/2017/06/fake-news-fake-history/

History - the analytical interpretation of the past based on critical assessments of evidence - is being transformed by the digital revolution and changes in the way we communicate.

Nowadays, a large proportion of information is received from digital media, giving creators and users of these platforms the authority to dictate what should or should not be payed attention to. What passes for history frequently consists of fragments of the past that are disseminated online, removed from context, without analysis, and used to forward a political, ideological, commercial, or personal agenda. In a similar way that this environment has changed what is referred to as journalism and news, it has also changed what is referred to as history. It fosters an environment where "fake history" can flourish.

There are many examples of fake news and fake data being used throughout history, one of the most recognisable being about Christopher Columbus.

*Ancient people thought the Earth was flat and who discovered America*

If we ask people when they believe our ancestors first started to think that the world is round, most of them would probably answer between the 15th and 17th centuries. This is partly because many of us still believe that one of the reasons that Christopher Columbus headed west in 1492 was to prove that the Earth was round. However, this is false. Proving that the Earth was a globe wasn't a priority for Columbus as back in those days as the vast majority of people knew that already. In fact, Aristotle and others began attempting to determine its circumference in the fifth century BC[22].

However, the fact that so many people think otherwise may be largely the fault of the American writer Washington Irving, who in 1828 produced a hagiography of Columbus that cemented the Italian explorer as the 'discoverer' of America (despite there already being some 60 million people living there) while attempting to prove that the Earth was round.

This also demonstrates another fake historical fact that most people tend to believe – that Christopher Columbus discovered America. Even many people still believe that Columbus was a great sailor that discovered America, in fact, Columbus was not. He assumed he was off the coast of China or someplace east of Japan when he arrived in the Caribbean because he had estimated the size of the Earth incorrectly by roughly 25%. His subsequent treatment of

[22] https://www.historyextra.com/period/modern/fake-history-historical-myths-lies/

everyone he came into contact with was so brutal that he was eventually arrested by the Spanish authorities and sent back to Europe in chains.

Because it fits the narrative of brave and astute European sailors bringing light to the dark corners of the Earth while demonstrating that it was round better, many would prefer believing in unifying but fundamentally false myths that distort our understanding of the past and the people who lived there. Such a mindset, unfortunately, intentionally or unintentionally shapes the entire world.

### 1.5.2 Historical distortion

In order to further particular ideologies and objectives, historical distortion can be defined as the modification of history through the manipulation of stories, facts, and data. This can be accomplished by making up fictional events, changing real-world events, or deleting specific events entirely. As time goes on, the people who actually witnessed historical events start to dwindle away, and the distorted version starts to be regarded as fact.


*Figure 15 - Distortion of history. Source: timesofindia.indiatimes.com*

An important aspect of historical distortion involves the spread of myths and fake narratives, intentionally confusing those who come across them and devaluing established historical narratives by portraying them as mere opinions

The process of distorting history proves effective in erasing certain events from the collective memory, glorifying selected events and individuals that align with state ideals, and vilifying events and people that contradict those ideals. By presenting history in a manner that supports the state's agenda and reinforcing it through the education system and media, perceptions of the general population can be manipulated to prevent dissent and foster nationalistic sentiments.

Historical distortion distorts facts and established narratives leading to widespread confusion in the era of online disinformation. It has become a political tool used to shape the decisions and behaviour of its audience. The political and social consequences of such distortion manifest as anti-intellectualism, including the act of belittling intelligence (smart shaming), and attacks on human rights workers, democratic institutions, and the media. These consequences pose significant threats to a democratic society.

Falsification or fabrication of historical facts not only misleads individuals but also undermines our understanding of the past as a whole, affecting how we view the present and the future. While falsification, denying or even trying to rewrite the history of the past is more prominent in illiberal or dictatorial systems regimes, democratic countries are also not immune to this. A few examples of this in our day and age can be found below:

*American history and native people*

There is evidence of historical distortions in early American history as taught in public schools. Textbooks, even contemporary ones, are full of myths and over-the-top hero stories. These textbooks frequently present Native Americans as uncivilized savages by using inaccurate information and preconceptions. The disastrous effects of diseases brought by Old World settlers, killings, and forced labour, which led to an estimated 80% fall in the native population between 1492-1650, are also little mentioned.

*Viktor Orbán's speech titled "Will Europe Belong to Europeans?" in 2017*[23]

In July 2017, the Hungarian president had delivered a speech to students. The speech contained It contained rambling passages about how a "Soros plan" was in place to bring in "hundreds of thousands of migrants every year – if possible, a million – to the territory of the European Union from the Muslim world". Besides inciting hate towards other religions and promoting far-right conspiracy theories about the Christian majority being threatened by demographic "replacement", he also tried use the Hungarian history to suit his agenda. In his speech, he mentioned that not since the treaty of Trianon Hungary has been as close as it is today to regain its vitality and power. Viktor Orbán was referring to the post-first World War treaty that deprived Hungary of two-thirds of its territory. His idea was that Hungary must seek restitution for historical humiliation. It is said that his government is retaliating for grievances from the 20th century as it spars with the EU over immigration quotas. Further distortions by Orbán

[23] https://www.theguardian.com/commentisfree/2017/aug/04/fake-news-fake-history-turkey-china-rewrite-past

involve the complete altering of troubling portions of history. He has been quoted as calling Miklós Horthy, the Nazi-collaborating leader of Hungary, an "exceptional statesman".

Unfortunately, Viktor Orbán is not the only politician who is twisting history to fit his own political agenda. Another example is the Turkish president Recep Tayyip Erdogan. During his presidency, the founding father of the secular republic, Ataturk, has been trivialised in the school curriculum, in an effort to reverse that legacy and glorify the Ottoman past.

*Denial of the holocaust*

The systematic state-sponsored persecution and mass murder of European Jews by the Nazi dictatorship occurred during the Holocaust (1941–1945). Under Adolf Hitler's anti-Semitic rule, an estimated six million Jews and other minorities were killed by the Germans during this time, either directly (by gas chambers, for example) or indirectly (by famine, for example). It's one of the most horrifying "stains on European history".

However, despite all the evidence and information available, including the testimonies of survivors, there are people who are trying to rewrite history. A research study by the United Nations and UNESCO published in 2022, revealed the extent and nature of Holocaust denial and distortion on Facebook, Instagram, Telegram, TikTok, and Twitter in English, French, German and Spanish. The report found that nearly half of all content on public Telegram channels that discusses the Holocaust either denies or distorts its history[24]. This includes over 80 % of posts in the German language and approximately 50 % of posts in English and French. These posts are often explicitly anti-Semitic. They are easily accessible to people searching for information about the Holocaust on the platform as Telegram has no policy to take action on Holocaust denial or distortion.

It is important to emphasize that Genocide Denialism is not only an attempt to refute indisputable historical truths but also an attack on those who survived genocide and their descendants.

To summarize, there will always be people in our societies, who for some financial, political or other 'reasons' will seek to distort the facts and rewrite the history. The digital media and new technologies available, including the way we consume information nowadays, make it easier for them to do.

[24] United Nations and Unesco study (2022). History under attack: Holocaust denial and distortion on social media.

As the users of media, we have to understand one main truth - history is not the story of an all-knowing, flawless hero who always did the right thing, nor is it a glorified stroll through a park where we stop to admire statues of long-dead figures. History is supposed to carry a moral component to it. It is a record of both the good and the bad, of our history's highs and lows, victories and tragedies. History serves as a reminder that in order to go forward, we must first start admitting the mistakes made by earlier generations. History cannot be deleted or rewritten. The future and society's impact on it, however, can be influenced to prevent history from repeating itself.

### 1.5.3 History and Morality

It is impossible to ignore the moral component of history. Despite historians' best efforts to construct interpretations and narratives based on solely historical facts, documentation, and context, moral considerations invariably enter the picture.

History is also inherently political because its narratives are shaped by exercises of political power and the resistance of marginalised groups. The discipline of history also analyses the gaps within narratives, often amplifying the voices and stories of minorities and the oppressed, which often clash with those in positions of power.

Falsifying established histories and historical truths has severe moral repercussions. In addition to further marginalising and already disadvantaged communities, particularly minority groups who have been and still are victims of societal injustice, it normalises and excuses misbehaviour like theft and violations of human rights. In the end, historical distortion justifies authoritarian regimes and their abuses while invalidating human suffering.

Legitimate and distorted narratives will inevitably clash, especially in relation to dark and controversial events of the past, such as authoritarian regimes, genocide, and conflicts. In today's interconnected world, social media plays a significant role as a battleground for the clash of narratives, given its broad reach and influence.

The discipline and study of history remain more relevant than ever. In the 21$^{st}$ century, history as a subject taught in schools plays a vital role in cultivating critical thinking skills necessary for navigating a world rife with historical distortion, online disinformation, and unchecked algorithms. Through critical examination, the study of history helps dispel myths and misconceptions while establishing facts that should serve as the foundation for further historical inquiry.

## 1.6 Distorting of history with biased websites – What is Bias? – theory and practice

### 1.6.1 Understanding the concept of bias

In order t to understand how our history is being distorted by bias, we have to grasp the meaning of bias first. Bias can be explained as „the action of supporting or opposing a particular person or thing in an unfair way, because of allowing personal opinions to influence your judgement."[25]

A bias is a predisposed preference for or against a concept, object, person, or group. It is often learned and greatly influenced by factors such as a person's financial situation, race, ethnicity, educational background, etc. Bias can have a detrimental effect on a person's interpersonal and professional interactions on an individual level, and it can cause unfair group persecution on a societal level, such as in the Holocaust and slavery.

Some prejudices, such as the decision to only consume foods that are known to be healthy or to avoid those who have intentionally harmed others, are constructive and advantageous. However, stereotypes rather than actual information about a person or situation are frequently the basis for bias. Such cognitive shortcuts, whether beneficial or harmful, might produce biases that result in rash judgments or discriminating actions. Stereotyping others based on the group they belong to or a fixed physical attribute they have, such as their gender, race, or sexual orientation, is a common definition of bias. However, people might or might not be conscious of their prejudices. This is what we call unconscious or implicit biased.

Implicit or unconscious bias is when one's decisions are unconsciously influenced by pre-existing beliefs about a certain group of people. On the other hand, explicit bias is when one is aware of their pre-existing beliefs about a specific group of people and makes intentional decisions based on these beliefs. While an explicitly biased person controls their actions, implicitly biased person needs guidance to eliminate bias from their thinking[26]

Another category of biases is called cognitive biases. Cognitive biases are repeated, systematic errors of thinking that occur when people misinterpret information in the world around them. Cognitive biases can affect the rationality of people's judgement and can lead them to make

[25] https://dictionary.cambridge.org/dictionary/english/bias
[26] https://www.easyllama.com/blog/difference-between-implicit-bias-and-unconscious-bias/

inaccurate or unreasonable conclusions or decisions[27]. Cognitive bias can be a cause of faulty memory, lack of attention, natural limits in the brain's ability to process information, emotional input, social pressures, and even ageing.

There are as many as 175 different types of cognitive bias. However, some of these cognitive biases occur more frequently than others. Some of the most common cognitive biases are actor-observer bias, anchoring bias, attentional bias, availability heuristic, self-serving bias., and confirmation bias, among others.

In the context of fake news, disinformation and propaganda, confirmation bias is very important. Confirmation bias is our tendency to cherry-pick information that confirms our existing beliefs or ideas. Confirmation bias explains why two people with opposing views on a topic can see the same evidence and come away feeling validated by it. This cognitive bias is most pronounced in the case of ingrained, ideological, or emotionally charged views[28].

Confirmation biases affect not only how we receive information but also how we analyse and remember it. People who favour or oppose a certain subject, for instance, not only look for material to back it up but also interpret news articles in a way that supports their preconceived notions. Additionally, they will retain information in a way that supports their attitudes.

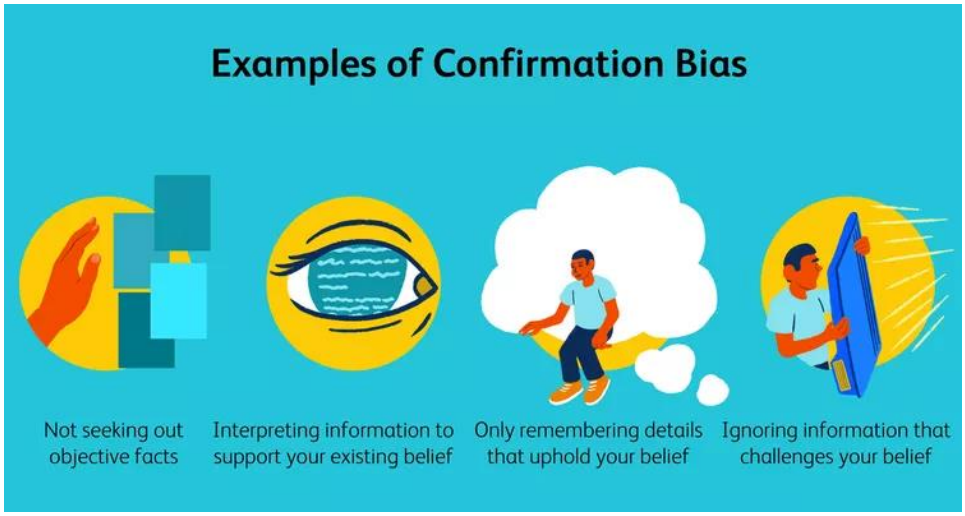


*Figure 16 - Examples of confirmation bias. Source: https://www.verywellmind.com/*

[27] https://cpdonline.co.uk/knowledge-base/safeguarding/types-of-bias/
[28] https://fs.blog/confirmation-bias/#:~:text=Confirmation%20bias%20is%20our%20tendency,away%20feeling%20validated%20by%20it.

There are a few different types of confirmation bias that can occur. Some of the most common include the following[29]:

- **Biased attention** - selectively focusing on information that confirms our views while ignoring or discounting data that doesn't.
- **Biased interpretation** - consciously interpreting information in a way that confirms our beliefs.
- **Biased memory** - selectively remembering information that supports our views while forgetting or discounting information that doesn't.

Unfortunately, this type of bias can prevent people from looking at situations and evaluating media objectively. It can influence their decisions and lead to poor or faulty choices, including falling for propaganda and fake news.

### 1.6.2 Ways the Media Distorts the Information in Everyday Life: Analysis of Media Bias

The term "media bias" refers to actual or alleged biases held by journalists and news organisations. Instead of referring to the prejudice of a single journalist or the bias in a single news piece, media bias generally refers to pervasive bias that compromises the quality of journalism. The events that editors choose to cover, the articles they choose to publish, the point of view from which reporters write those stories, as well as the language they use, can all be impacted by media bias.

Unconscious bias is present in a lot of media, which occurs when journalists don't have access to all the information they need to write stories that are impartial toward all parties. However, certain media contain blatant bias, in which reporters and/or news organizations consciously attempt to present people, groups, or events in a particular light, either for monetary gain or for political objectives.

Media bias changes a lot of people's minds. It affects one's beliefs, values, voting values, and political position, and the information that may be gotten might be wrong.

The media have various ways and techniques of distorting information. Some of the most common ones are described below[30].

[29] https://www.verywellmind.com/what-is-a-confirmation-bias-2795024
[30] https://www.allsides.com/media-bias/how-to-spot-types-of-media-bias

*Bias by omission*

Omission bias is defined as "the temporary omission of a page from an article or series of articles; Ignoring facts that tend to contradict or support liberal or conservative claims or beliefs."

*Source selection bias*

Source selecting bias means „involving more sources that support one view over another". For example, in a debate about if smoking should be forbidden in apartment building balconies, a journalist invites nine smokers and one nonsmoker. This would obviously result in an unfair debate as the majority of the sources selected most likely would be biased regarding the issue.

*Story selection bias*

Story-selection bias is „a pattern in which news stories consistent with the agenda of either the left or the right are highlighted while news stories consistent with the opposite view are ignored". An example would be presenting a study that says there is a cure for cancer, but another study showed the procedure had a one-in-a-million success rate. It's beneficial for the public to hear stories that make people feel good, but if they only tell one side of the story– for example, how many times the procedure was successful – people will propagate false information.

*Placement bias*

Placement bias is „a measure of how important the editor thinks the story is". Studies have shown that the average newspaper reader only reads the headline of a news story. Most people will read the headline and form an opinion based on that if later in the article the author can refute the headline using the evidence they have gathered.

*Viewpoint placement bias*

Bias by viewpoint placement is a related type of bias by placement. This can often be seen in political stories. A balanced piece of journalism will include perspectives from both the left and the right in equal measure. If a story only features viewpoints from left-leaning sources and commentators or includes them near the top of the story / in the first few paragraphs, and does not include right-leaning viewpoints, or buries them at the end of a story, this is an example of bias by viewpoint.

*Labelling bias*

One of the biggest types of bias is used daily by television media. Labelling bias comes in two forms. The first is to label conservative politicians and groups with extreme labels while not labelling them or labelling them more leniently, or vice versa. The second type of labelling bias occurs when a reporter not only identifies a liberal as a non-liberal or a conservative as a conservative but also describes the person or group with positive labels, such as „expert" or „independent consumer group.".

*Spin bias*

Bias by spin „occurs when the story includes only one interpretation of an event or policy and excludes the other; it's all about the tone – it's a reporter's subjective comments on objective facts that makes one side's ideological perspective look better than another".

These biases are not only used by big corporations or only on national television but all over the world. From the largest corporation to the smallest newspaper, bias is being harnessed and creating the world we live in now.

Social media platforms are also delivering a one-sided message to their audience. Social media use mathematical formulas, algorithms, to create a messaging platform that can influence the reader's thought process. The unfortunate thing about this information is that nowadays the readers are not provided with all the information that would allow them to develop their own interpretation of the information. This has the potential to create a society of mindless drones who only believe what they hear and see.

By learning how to spot media bias, how it works, and how it might blind us, we can avoid being fooled by media bias, fake news and propaganda. We can learn to identify and appreciate different perspectives– and ultimately, come to see a "bigger picture".

### 1.6.3 Main issues with media bias

Media bias poses several significant problems, although it is to some extent inevitable, especially when it occurs unconsciously. However, it is crucial not to ignore the issues it creates. The main negative consequences of media bias are the following:

**1. It can lead to censorship***:* When a media outlet consistently chooses to omit stories that do not align with its own biases, it can be a form of censorship. Consequently, consumers of that

outlet may develop a distorted view of certain issues, as they are not presented with a diverse range of perspectives.

**2. It can be politically motivated:** In the course 'Journalism and the Public Sphere' offered by the University of Strathclyde, experts discuss how political coverage in the media often collaborates with government communication professionals and political parties. As a result, different newspapers may present varying versions of events based on their political views.

**3. Extreme bias can transform into propaganda:** If a media outlet displays extreme bias in favour of the governing body, the news presented may not only be inaccurate but could also manipulate consumers into unquestioningly accepting government decisions. When such extreme bias occurs in government materials or through a single primary media outlet, it can be considered propaganda.

**4. It can cause divisions in society:** Left-wing and right-wing media often present different perspectives on the same issues, which can lead to divisions among people regarding what actions to take or how to feel about those issues. Biased reporting, in general, can create unfair representations of individuals or groups in society, resulting in negative stereotypes and unfair treatment.

Recognizing these problems helps us develop media literacy skills, enabling us to critically evaluate information and seek a more balanced understanding of complex issues. By actively seeking diverse viewpoints and engaging in respectful dialogue, we can work towards bridging societal divides and fostering a more informed and inclusive society.Recognising media bias
Recognising media bias can be achieved through various approaches. According to FAIR, a national media watchdog group in the US, there are several questions to be asked when consuming media to uncover biases. Some of these key questions are:

1. **Who / what are the sources?** When reading an article, a blog or social media post consider where the author obtains their sources. Are all the sources exclusively from corporate and government entities, or do they include perspectives from progressive, public interest, minority, or female voices?

**2. Is there a lack of diversity?** Assess the diversity within a particular media outlet's workforce compared to the communities they serve. Do they have a range of producers, editors, and managers from different racial, gender, and sexual orientation backgrounds? A fair representation would include diverse individuals in leadership positions.

**3. From whose point of view is the media reported?** Perspective plays a key role. Often, political coverage may focus on how certain issues impact politicians or corporations. To ensure fairness, media outlets should present the viewpoints of those most affected by the issues being discussed.

**4. Are there double standards?** Look for potential double standards by identifying similar examples covered by the same media company or instances where similar stories were presented differently. For instance, consider whether stories about men and women are treated equally in terms of writing style and tone.

**5. Is there a lack of context?** Stories without proper context can present a distorted picture of society or specific groups within it. For example, an increase in crime rates in a particular area may be attributed to rising poverty, but this connection might not be adequately explained, leading to a misleading portrayal.

Some other questions worth asking:

- Do stereotypes affect reporting?
- Do the headlines and stories match?
- Is there a lack of context?

By asking these questions, people can develop a critical perspective and better identify potential biases in the media they consume. It allows for a more nuanced understanding of the information presented and helps promote media literacy.

### 1.6.5 Fighting back against biased sources

**Analysing resources**

When reading sources, especially primary sources, one may notice that some of the wording used by the author of the source is extreme or obviously one-sided. If a person notices this, they have identified a possible bias. As people learn more about bias, they can make meaningful judgements about a source.

To analyse the source, it is helpful to ask oneself the following 4 questions:[31]

- **Who created the resource?** Whether it's a book, journal article, website or photograph, sources are influenced by the ideas of the person who created them. It

[31] https://ergo.slv.vic.gov.au/learn-skills/research-skills/select-resources/identify-bias

is helpful to think about the creators' background and whether the creator is presenting the whole story.

- **When was the resource created?** Any type of resource will reflect the society and time in which it was created. Thus, it's useful to think about the events, people and ideas – or historical context – that surround it.
- **Why was the resource created?** Writers, artists, historians, photographers and other creators will sometimes use their work to persuade people about a particular viewpoint or interpretation of an idea or event. So, it's important to work out why the resource was created.
- **Who was the resource created for?** For a wide range of consumers, a variety of resources are produced, including maps, government papers, diaries, images, websites, and marketing materials. Therefore, it's crucial to consider how the format and general message of the resource have been influenced by the intended audience.

Besides these basic questions, in analysing a source, it is important to be vigilant for other certain indicators[32]:

**1. Language of the source**: Special attention should be paid to instances where the language used to describe people or events appears excessively positive, omitting any negative aspects. The same goes, for instances, where the language is excessively negative, failing to acknowledge any positive elements. These biases can suggest that the creator of the source has a specific agenda and intends to shape the audience's perspective accordingly.

**2. Gaps of crucial information:** It is important to look out for any significant omissions of crucial information that you are aware of. A bias or an attempt to influence the narrative by selectively providing the material may be evident if the source neglects essential facts or events that are commonly acknowledged as significant.

**3. Incorrect information**: If the source presents information that is clearly incorrect or contradicts established facts, it can be a clear sign of bias or an attempt to distort the truth to fit a particular narrative or agenda.

Finding any of these signs in a source implies that the author has a particular bias and seeks to influence the audience's opinion by presenting facts in a way that supports that bias. To develop

[32] https://www.historyskills.com/source-criticism/analysis/bias/

a comprehensive grasp of the issue, it is crucial to critically assess such sources and take into account various viewpoints.

*Proving that the source is biased*

Once you have identified bias in a source, you can provide evidence to support its existence by following these steps:

1. Selection of a direct quote from the source that clearly demonstrates either overly positive or negative language. This quote has to provide a concrete illustration of how the author's description of a person or event is biased.

2. Analysis of the chosen quote to determine the perspective the creator intended to instil in their audience regarding the subject. Did the language used intend to create a favourable or unfavourable perception of the subject or event? It has to be kept in mind how the author's language and tone affect the audience's interpretation.

3. It may be helpful to delve into the potential motivations behind the bias in the source. Why would the author have a personal stake in providing a particular viewpoint? The influences that may have affected the creator's desire to sway the audience's perspective, such as personal convictions, political allegiances, or agendas, have to be taken into consideration

It's crucial to understand that bias does not necessarily make a source unreliable or wrong. Knowing the source's biases enables us to spot informational gaps and take into account other viewpoints. We can get a more thorough and educated grasp of the topic by critically examining biased sources and looking for a balanced perspective through a variety of sources.

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# CHAPTER II

## 2.1 Disinformation through distortion in the era of big data and social networks

"Fake news" is defined in the Collins English Dictionary as false and often sensational information disseminated under the guise of news. The term evolved over time and became synonymous with the spread of false information (Cooke, 2017).

The first definition of the term *fake news* was provided by Allcott and Gentzkow (2017) as 'news articles that are intentionally and verifiably false and are likely to mislead readers'. Then, other definitions were provided in the specialized literature but they all agree on the non-factual nature of fake news (they are not based on real facts). Some scholars disagree about the inclusion and exclusion of related concepts such as *satire, rumor, conspiracy theories, disinformation and hoaxes* from the given definition. More recently, Nakov (2020) reported that the term *fake news* has come to mean different things to different people, and for some politicians, it even means 'news I don't like'.

Therefore, there is still no universally agreed definition of the term 'fake news'.

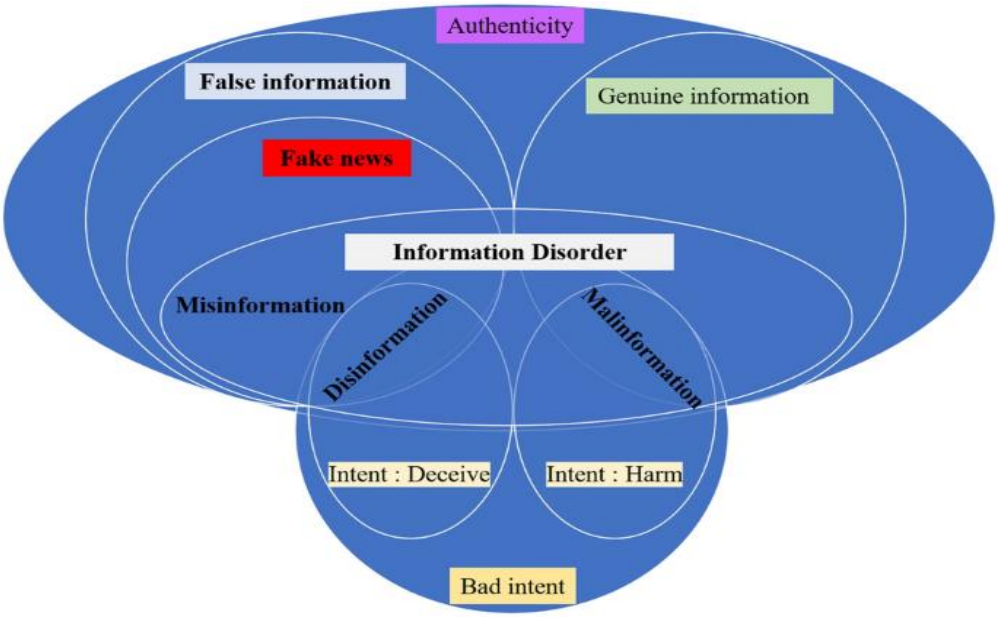


*Figure 17 - Modeling the relationship between fake news terms. Source: [https://link.springer.com/article/10.1007/s13278-023-01028-5#Sec23](https://link.springer.com/article/10.1007/s13278-023-01028-5#Sec23)*

### 2.1.1 Disinformation - misinformation – mal-information?

When we talk about **disinformation**, we are most often talking about a family of related terms that are important to understand in order to better distinguish the types of actions they define: **disinformation**, **misinformation** and **mal-information**. All these terms are part of the family of disinformation techniques, techniques that aim to manipulate through information.

- **Disinformation** is a technique that involves the *intentional dissemination of completely false content (text, photo, video) or that mixes true information with false information about a person, thing, fact or event, with the aim of causing harm or ignoring the fact that it could cause harm*. Often, disinformation is done with automated digital accounts used for astroturfing[33], fake follower networks, fabricated or manipulated videos, targeted advertising, organized trolling, visual memes, etc.

1. **Misinformation** *is unintentional, made by mistake, by an error of the one spreading the information.* This is a technique that involves unintentionally spreading content (text, photo, video) that is completely false or that mixes true information with false information about a person, thing, fact or event and *without the intention of causing harm*. For example, posting an article that contains outdated information, but does not realize it.

*1.* **Mal-information** involves *intentionally spreading true content (text, photo, video) about a person, thing, fact or event and with the explicit intention of causing harm or ignoring the fact that it could cause harm.* As a rule, we are talking about content that involves personal information intended to remain private. *For example, when someone who uses a photo of a dead child (unrelated to the facts reported in the text) to incite hatred against a particular ethnic group. This category of manufactured content is very common today and extremely harmful.*

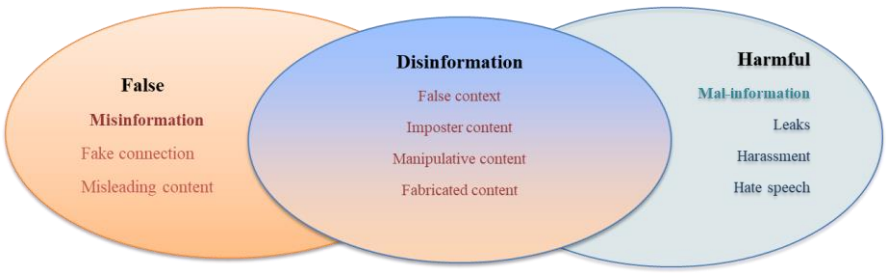


*Figure 18 - misinformation, disinformation and mal-information*

[33] *Astroturfing* is a term used mainly in the USA and refers to a propaganda technique used for advertising, political or public relations purposes, which aims to create the appearance of spontaneous behavior in support of an opinion, in order to give it an alleged "popularity" on who does not actually own it

### 2.1.2 The main reasons why fake news is released into the market

Fake news is a real weapon in the struggle for power (political, economic, financial, etc.) used for various purposes:

- Gaining political power and/or advantages, which may consist either in the emergence of distrust, division, conflicts and confusion among the opponent, or in mobilization, loyalty and support in one's own camp;
- Generating traffic on online platforms in order to earn money from advertisements;
- For marketing and sales: influencers promote certain products on YouTube, podcasts, etc., because they are paid by their producers to advertise them, hiding the fact that they are advertising materials.
- For fun or for trolling. **Trolling** refers to a type of malicious online behavior designed to disrupt interactions, annoy the people they interact with, and engage them in a pointless argument. Those who practice trolling are called trolls).

Some elements that make a fake news include:

- ✓ unverifiable information;
- ✓ materials written by non-experts;
- ✓ information not found on other sites;
- ✓ information coming from a fake website;
- ✓ stories that appeal to emotions instead of stating facts

Categories of fake news include:

- **Clickbait**. It uses exaggerated, questionable or misleading social media headlines, images or descriptions to drive web traffic. These stories are deliberately fabricated to attract readers.
- **Propaganda**. This is spreading information, rumors or ideas to harm an institution, country, group of people, or an individual, usually for political gain.

1. **Imposter content**. It is a type of disinformation that impersonates authentic sources, such as by using the branding of an established news agency. It is often designed to propagate misconceptions by usurping a credible source. For example, a fabricated CNN headline promoting a falsehood can lend credibility to that lie to those who are inclined to believe it.

- **Biased news**. This entices readers to confirm their own biases and beliefs.

- **Satire**. This creates fake news for parody and entertainment by presenting humorous but fake news as if it were true. Although they are not usually classified as fake news, this can unintentionally fool readers.

Two of the best-known satirical brands are *Onion* and *The Daily Show*. *The Onion* is a largely text-based website(s) and *The Daily Show* airs on Comedy Central and also posts shows and clips online. Here are some examples from their work.

Trump Unveils New Stretched Presidential Retreat Where He Can Escape Mar-A-Lago Stress

Sean Spicer: Kindergarten press secretary. https://youtu.be/3RCcrt56tO0

- **State sponsored news**. It operates under the control of the government to create and spread disinformation to the residents.
- **Misleading titles**. These stories may not be completely false but they are distorted with misleading headlines and small snippets shown in news feeds.

Fake news is harmful because it can create misunderstandings and confusion about important issues. Spreading false information can intensify social conflict and cause confusion or panic.

Play the game! https://wordwall.net/resource/58182584

**Watch** the video to better understand how fake news can be created!

https://www.youtube.com/watch?v=nOd2vMCDv9M&feature=youtu.be

### 2.1.3 What contributes to disinformation in social media?

Fake news spreads faster than other news because it stirs emotions and grabs attention. In the age of the Internet, their propagation is incredibly faster than it was a century ago.

**Watch the video!**

https://www.youtube.com/watch?v=cSKGa_7XJkg&ab_channel=TED-Ed

Here are some of the ways misinformation spreads on social media:

- **Repeated distribution.** It's easy to share and 'like' content on social media. Every time a user shares it to a social network, the number of people who see that content increases.
- **Recommended engines (systems).** A recommendation engine is an artificial intelligence-based system that is integrated with social platforms and search engines in order to identify and offer digital content or articles to users based on previous preferences and search history. These can help show even more fake news to someone who has already consumed such news.
- **Engagement values.** Social media feeds prioritize content based on engagement metrics, such as how often readers share or agree with stories.
- **Artificial intelligence.** AI systems can also facilitate disinformation. AI can create fake realistic material based on target audience. AI engines can generate messages and instantly test their effect on audiences. Additionally, bots can be used to spread misinformation by impersonating human users.
- **Hackers.** These people can publish articles in the current news media and give the impression that they are from a reliable source. For example, Ukrainian officials reported that hackers compromised government websites and spread fake news about the peace deal.
- **Trolls.** Fake news can also appear in comments on legitimate articles. Trolls are posted on purpose to annoy other readers and start a discussion. Some are paid for political reasons to help spread fake news. During political campaigns, social media and other places on the Internet are flooded with trolls, paid and unpaid, favoring the candidates and smearing the competition.

In the web context, **trolling** is understood to mean intentionally disruptive reactions to online content or comments. The name is a tribute to the way online trolls try to lure victims with their

comments, just like fishermen use specially designed lures to catch fish. Another clue concerns a mythical troll, a fearsome creature that waits for its prey in dark places.

On the Internet, trolls are people who enter communication channels, such as comment spaces, just to cause trouble. Trolls often use comment spaces to harass other online users, discredit valid content and comments, or spread disinformation. Trolls are often puppets, fake accounts created to allow users to advertise their intentions anonymously.

Grammar trolls[34] often invade comment spaces to insult authors and other commenters' use of language and punctuation. Grammar trolls usually don't say anything that actually relates to the post or comment they're responding to.

Interacting with trolls is generally considered useless at best and offensive at worst. Psychological **effects** on victims include increased social anxiety and depression and decreased self-esteem.

The most effective defense against trolls is to simply ignore them. A target's reaction is often the reward they are looking for, and they are more likely to flee if they don't get it. DNFT (Don't Feed the Trolls) is a common warning in comment spaces. Another tactic is to identify and ignore **trolling** so others don't take it seriously.

### 2.1.4 Did you know that...

- ✓ A true news story takes up to 6 times longer than a fake news story to reach the same number of people.
- ✓ Fake news is up to 70% more likely to be shared than real news.
- ✓ In 2019, 37.2% of internet traffic was not done by humans, but by bots. They are a type of digital bot and are actually executable software programs that act as human surrogates and mimic their behavior on the Internet, often pretending to be real people.
- ✓ Facebook reported that between October 2017 and December 2020 (the latest available data) it deleted around 16.33 billion fake accounts from the platform; this is 6 times the number of active users (about 2.80 billion as of December 2020) and twice the population of the globe today.

[34] Often incorrectly defined as a grammar nazi (even by the Urban Dictionary, see tags), a grammar troll is, at its simplest, someone who corrects other people's grammar in comment spaces. Unlike a grammar nazi, they will correct trivial spelling and punctuation mistakes and word choice, especially when those minor errors or diction do not affect the meaning of the sentence.

### 2.1.5 10 ways to spot disinformation on social media

The first step in combating the spread of disinformation on social media is identifying fake news. We recommend double-checking before sharing. Here are 10 tips for spotting fake news and disinformation.

**1. Check other reliable sources**

Check other trusted news sites and channels to see if they are reporting this story. Check the authoritative sources cited in the article. Professional and credible news organizations have strict editorial guidelines for fact-checking their articles.

**2. Check the source of the information**

If you're not sure where this story came from, find out. Review the site's web address and look for weird non-.com domains like .infonet or .offer. Check the spelling of the company name in the URL.

Consider the source's reputation and subject matter expertise. Criminals can create websites that mimic professional websites and thereby spread fake news. If in doubt, visit that organization's home page to see the same information.

**3. Look at the author**

Search by author. Check your credibility, how many followers he has and how long his account has been active. Scan other posts to determine if they have bot behaviors, such as posting at any time of day and from different parts of the world. Look for features like numbered usernames and suspicious links in the author bio. If the content is redistributed from other accounts and contains highly polarized political content, it may be a fake bot account.

**4. Look for the profile picture**

Check the profile picture as well as the information and credibility of the author. Do a reverse image search of the profile picture on Google Reverse Image Search. Make sure the photo is not a stock photo or a celebrity. If the image does not look original, the article is anonymous and cannot be trusted.

### 5. Read beyond the title

Consider if the story doesn't sound realistic. Credible stories contain many facts supported by expert quotes, official statistics and research data. Be suspicious of information if there are no detailed or consistent facts other than headlines. Look for evidence that the event actually happened. Make sure the facts are not just used to support a particular point of view.

### 6. Develop a critical mindset

Don't let personal beliefs cloud your judgment. Biases can affect one's reaction to an item. Social media platforms suggest stories that match your interests, opinions and browsing habits.

Don't let your emotions dictate your opinion of the story. Look at the story critically and rationally. If the article tries to persuade the reader or direct them to another page, it is probably fake news.

Be careful of subjective language. Pay attention to subjective or biased language used in a news story. Real news tries to be objective and provide a balanced perspective on the subject. If a news story has a strongly subjective tone or promotes a clear agenda, it may not be a credible source of information.

### 7. Identify if it's a joke

Satire sites turn stories into parodies and jokes. Check the site to see if they regularly post funny stories and if they have a reputation for satire. A famous site about this is The Onion.

### 8. Watch sponsored content

Look for "Sponsored Content" or something similar at the top of the content. These articles are often accompanied by attractive photographs and seem to link to other news: advertisements designed to appeal to the reader's emotions.

Check the page and look for tags like "paid sponsors" and "advertising." These articles, whether genuine or fraudulent, trick readers into buying them. Some of these sites even redirect users to malicious websites that can install malware.

### 9. Use a fact-checking site

Fact-checking websites also help determine whether news is reliable or fake. These websites use independent fact-checkers to verify and research the accuracy of their information by checking reliable media sources. They are often members of mainstream news outlets who identify facts and false statements.

Popular fact-checking websites:

- ✓ **PolitiFact.** This Pulitzer Prize-winning site researches politicians' claims for accuracy.
- ✓ www.factcheck.org This site from the Annenberg Public Policy Center also checks the accuracy of political statements.
- ✓ **Snopes .** This is one of the oldest and most popular debunking sites on the internet that focuses on news, urban legends and memes. Independent fact checkers cite all sources at the end of the disclaimer.
- ✓ **BBC Reality Check .** This site is part of the British Broadcasting Company (BBC) which fact-checks news.

### 10. Verify the authenticity of the image

Modern editing software makes it easy to create fake images that look real. Look for shadows and jagged edges in photos. A reverse Google image search is another way to see where an image came from and if it hasn't been altered.

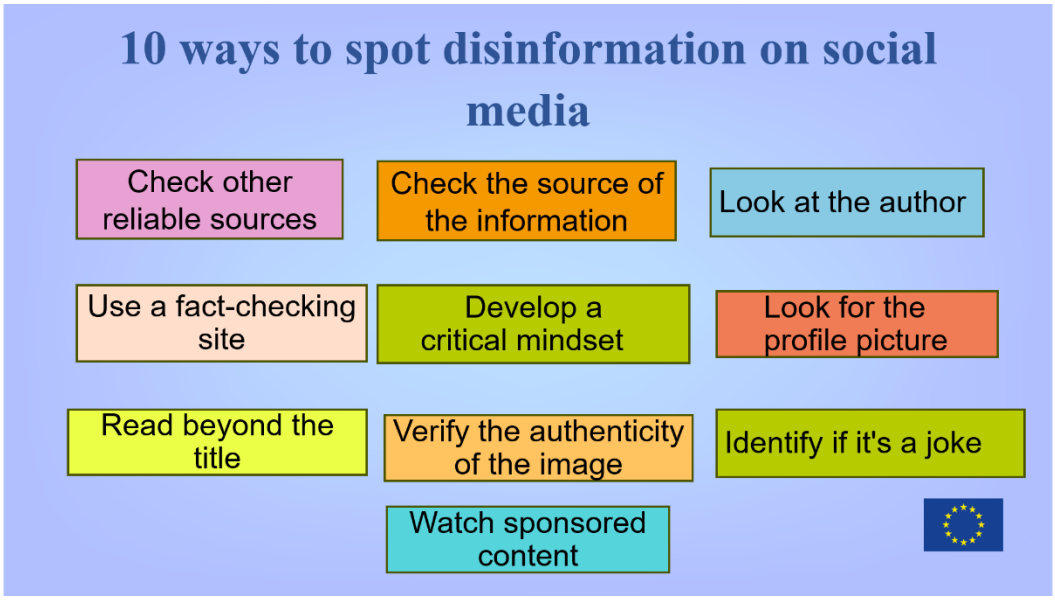


*Figure 19 - how to spot disinformation*

### 2.1.6 What exactly are social media doing to combat disinformation?

Social media platforms are taking action against disinformation. Facebook has introduced two initiatives to combat the general rise of disinformation. The News Integrity Initiative and the Facebook Journalism Project are raising awareness about the issue of fake news. The organization will also take action against sites and people who share fake news and remove them from their sites.

Instagram and Facebook have a new 'fake info' label to combat disinformation. Third party fact checkers review and identify potential false claims and posts. If this team determines that this information is false, they flag it with a label to let social media users know that it contains wrong information. When readers want to see a post with this tag, they have to click on a confirmation saying that the information is not true. If they try to share this information, they get a warning that they are about to share false information.

Twitter released a statement that they do not tolerate disinformation and have suspended accounts for manipulation or spam.

LinkedIn also encourages users to report any disinformation. If the review finds the information to be false, LinkedIn will remove the post. LinkedIn has a strict user agreement, and if users do not comply, they will be removed.

To combat fake news on social media, users must first identify what is fake. If a user believes that the information is fake news, it is best to report it to the platform.

The rules of the Internet are not as strict as the audiovisual media. And engaging information can go viral quickly. If what is written is not true, the damage has already been done and panic has set in, even if there is a later fix.

On April 1st, Facebook announced a free maskless concert in Brussels, Belgium. Thousands of young people gathered without even knowing it was an April Fool's joke. Many people were injured when military police intervened to disperse those who did not follow the protective regulations.

Official notice of those wishing to attend the concert would have been enough to stop the event. It should be known that in Belgium at the time, groups of four or more were not allowed and masks were required outdoors. They didn't even have to remember that it was April 1st...

A Disinformation Code of Conduct has been developed to combat online disinformation. Signed in October 2018 by Facebook, Google, Twitter, Mozilla, as well as advertisers and other advertising industry stakeholders. Microsoft joined in May 2019 and TikTok signed the code in June 2020. This document addresses: Advertising control, political and topical advertising, service integrity, consumer empowerment, and research community empowerment. The signatories are committed to keeping the internet open and secure. Anyone who violates the rules regarding the reliability or truthfulness of information published in the digital environment will be blocked or removed from the Internet.

*Donald Trump's Twitter account has been blocked for 'continued risk of incitement to violence' after he asked supporters to go to the Capitol building where the lawmakers who were supposed to validate that election in favor of Joe Biden, his opponent Trump. These supporters forced their way in, vandalized the Capitol building and occupied the offices of officials. The police started legal proceedings against them.*

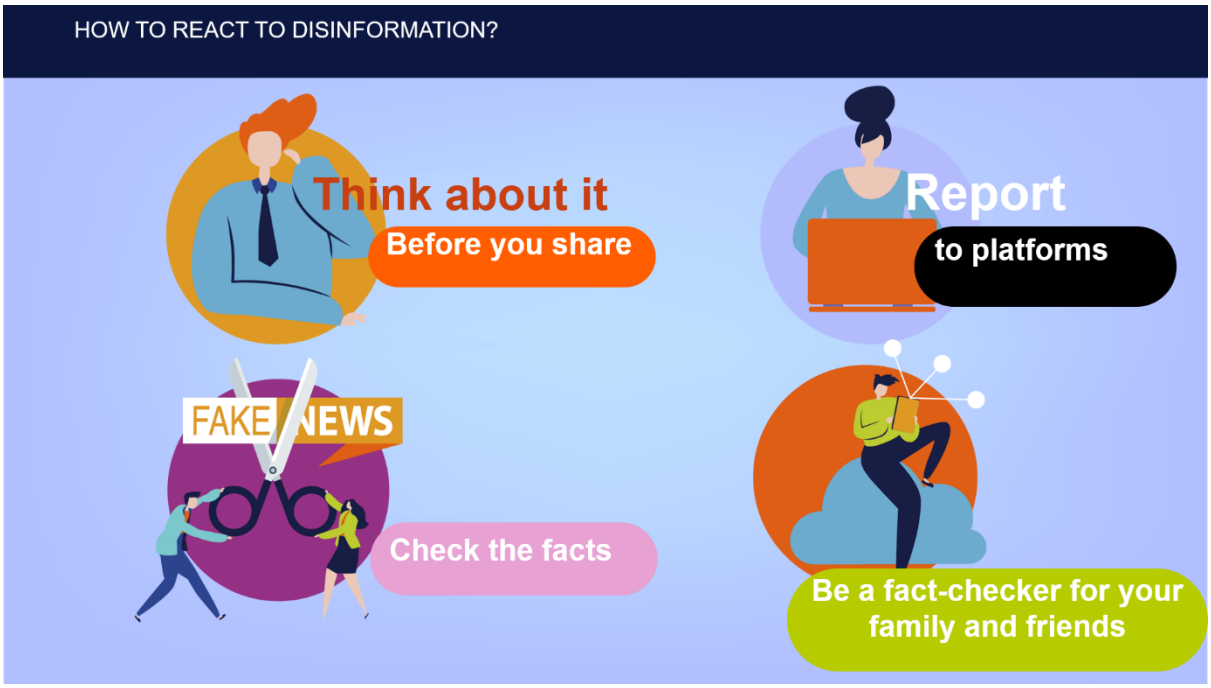


*Figure 20 - how to react to disinformation*

### 2.1.7 Some games about disinformation

**The Bad News Game** available in fewer languages. Create your own fake news. Standard version: for young people at least 15 years old.

**Real or Photoshop** (EN) Test your observation to better understand image manipulation. Available exclusively in English.

**Fakescape** (in Czech and English). Games that teach students how to "get rid of" fake news. On request and free for teachers. For students aged 13 and over.

**Fakey** (EN). Game that supports media literacy and addresses how people interact with misinformation. For young people aged 16 and over. Available exclusively in English.

**Escape Fake** (German and English). Downloadable game application that supports media literacy. For young people aged 15 and over. Available in English and German.

**Troll Factory** (EN). The player is a troll who creates fake news. For young people aged 16 and over.

Available exclusively in English.

**OTHER RESOURCES:**

1. The lists of fact-checking organisations in your country are updated by: **Poynter Institute** and **Facebook**
2. Search for web results to verify information about a topic or person using **Google's FactCheck Explorer**
3. **Learn to Discern )** – Handbook of Media Education Trainers, published by the non-profit organization for development and global education IREX

## 2.2 Fake news in the age of big data

### 2.2.1 What is big data?

**Watch the video!**

Big data refers to extremely large and complex amounts of data that exceed the capacity of traditional data processing and management systems. These data are characterized by three main attributes, known as "3V":

1. **Volume:** Big data involves large amounts of information. They can range from tens of terabytes to petabytes and even exabytes of data. That's significant scaling compared to traditional data.
2. **Speed**: Big data is generated, collected, and processed at a rapid pace. This speed refers to the frequency with which data is created or updated, as well as the need to process it in real time or in very short periods of time.
3. **Variety**: Big data can come in a variety of formats and sources. This can include structured data (e.g. relational databases), semi-structured data (e.g. XML documents), and unlimited or unincorporated data (such as social media feeds, sensor data, etc.).

Along with these "3V", sometimes other features are added, such as:

- **Value:** The importance and relevance of data for gaining valuable insights and insights.
- **Veracity:** The quality of data in terms of accuracy and correctness of information.
- **Vulnerability:** Security risks associated with collecting and storing such large amounts of data.

Collecting and analyzing big data can provide meaningful insights, operational insights, and the ability to make data-driven predictions or decisions. Technologies such as distributed storage systems, parallel processing technologies and data analytics tools are used to manage and extract value from these big data.

**Watch** the **video** to get a clearer idea of how big data operates!

### 2.2.2 Identifying and countering fake news with big data

Fake news is a problem. They are also a big data problem. In recent years, there have been numerous reports and press articles about the speed of spread of fake news generated by its distribution through online sources. Fake news spreads faster than real news (Mustafaraj and Metaxas, 2017; Vosoughi et al., 2018 ). This may be due to their novelty, their ability to generate outrage (which generates attention), or their role in confirming the reader's pre-existing biases. Most of the spread was viral, meaning they were distributed not centrally but through peer-to-peer broadcasting.

The excess of virtual data and trending analysis techniques have given rise to big data that "refers to our new ability to analyze a large amount of information, analyze it instantaneously, and sometimes draw astonishing conclusions from it [1]" Big data analysis is a trending practice in the fight against fake news, Because traditional methods of identifying the right information are not enough because of the volume and speed of fake news in digital media.

In the age of big data, machine learning algorithms are used to assess the authenticity of news from big data sets.

- Big data can be used to develop machine learning algorithms and models to identify and combat fake news.
- Data analysis can help detect schemes to spread disinformation and implement preventive measures.

Building propagation patterns proves useful in **automatically detecting fake news.** Deep learning approaches help to know the attitudes of social media users and effectively **identify fake news**.

**News classification** based on artificial intelligence (AI) tools is of paramount value to reveal the **authenticity of online news.**

**Neural networks** are extremely valuable for preventing problems generated by **false information** posted on social media applications.

The **natural language processing** technique is a popular method to **detect context-based fake news** prevalent on social networking sites.

**Watch the video!**

**Prompt learning with knowledge** is a great tool against fake news posted on digital media apps to promote baseless and irrational propaganda for personal benefit. Machine learning techniques and big quality data are beneficial to track the roots of fake news on social media forums.

### 2.2.3 Big data as a tool in spreading fake news

On the other hand, big data can have a negative impact, being used as tools in:

1. **Dissemination and amplification of fake news:**
   - Big data is often used to analyze users' online behavior, including their news preferences.
   - Machine learning algorithms and models can be trained to identify patterns for sharing fake news on social networks and news sites.
2. **Micro-pulling and opinion manipulation:**
   - Big data enables micro-targeting, that is, specifically targeting content to small groups of people based on their demographic and behavioral data.
   - It can be used to spread fake news tailored to specific audiences, thereby influencing their opinions.
3. **Sentiment analysis and audience reactivity:**
   - Big data is used for online sentiment analysis, allowing you to quickly identify topics that have the potential to go viral or spark intense reactions.
   - Fake news can be adapted to match these trends, increasing the chances that it will be widely distributed.
4. **Automated content generation:**
   - Big data technologies and artificial intelligence (AI) can be used to automatically generate content, including fake news.
   - Algorithms can analyze popular content patterns and automatically create articles or news that are more likely to be shared.

In conclusion, big data and the technologies associated with it can play a significant role in producing, distributing and countering fake news. It is important to develop and implement solutions that use big data responsibly to counter the negative impact of disinformation.

### 2.2.4 Risks arising from big data collection

The collection and use of big data brings with it various benefits, but also significant risks. Here are some of the main risks posed by big data collection:

1. **Privacy and data protection:**
   - The more data is collected and stored, the higher the risk of breaches of individual privacy.
   - Unauthorised access or leakage of data can lead to exposure of sensitive user information, which can have serious privacy consequences.
2. **Unauthorized use and abuse of data:**
   - An image containing text, poster, font, yellow  Automatically generated description
3. **Discriminare și Inechitate:**
   - Data analysis can lead to the creation of automated decision models that perpetuate or amplify existing inequities [15]
   - Collecting and using data in an unfair or discriminatory way can have negative consequences for vulnerable social groups or individuals. [16]

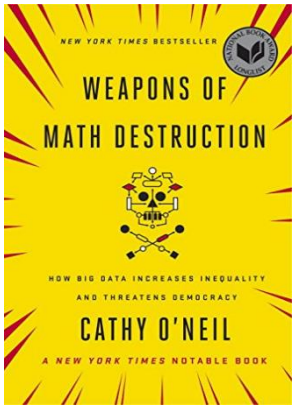


*Figure 21 - https://medium.com/@haleytaft/ethics-in-data-fa39e965727e*

4. **Cybersecurity:**
   - The more data stored, the more attractive it becomes for attackers to try to gain unauthorized access to this information.
   - The risk of cyberattacks and identity theft increases with the expansion of data collection and storage.
5. **Oversurveillance:**
   - Collecting and analyzing data in an extensive way can lead to excessive surveillance of individuals, which can affect their freedom and privacy.
   - Increasing monitoring capacities may raise concerns about the rule of law and respect for fundamental rights.
6. **Over-reliance on technology:**
   - A society overly reliant on big data can become dependent on technology, which can create significant vulnerabilities to technological problems, human error or cyberattacks.

7. **Lack of transparency and accountability:**

- Complex data analysis processes can make it difficult to understand how decisions are made, which can lead to a lack of transparency and accountability.

There is a multi-billion-dollar information economy, but most of us don't know who buys our data or how to keep that data private. While this is troubling to the public, who are adopting new communication technologies faster than ever, the market is now influencing social science research in troubling new ways. Researchers rely heavily on access to social media datasets to conduct studies about group dynamics.

A new area of disinformation research has emerged in the wake of the 2016 US election. **Disinformation studies** are characterized by revealing the deliberate exploitation of social media platforms and the open web to manipulate public understanding of political issues. **The field of disinformation research** combines the fields of sociology, media studies, and political science with the more technical fields of data science and cybersecurity to study how information and communication technologies are used by bad actors. Methods for studying the phenomenon of disinformation are still evolving, but companies' control over social network data has led to unequal access and irreproducible research. At the same time, social media consumers are largely unaware that their behavior is being tracked and used for academic research, raising ethical challenges between protecting user privacy and obtaining consent.

As Hedgecoe (2004) points out, scientific research in genetics in the 1990s overestimated the potential of big data to identify rare diseases, while mis assessing the risks borne by patients. This article argues that collecting and processing large data sets from social networks calls into question the ethics of responsible research. Without clear limits on how social media data can be used in conjunction with a meaningful consent process, researchers can inadvertently expose participants to a variety of harms (Hedgecoe, 2004).

To understand the growing risks of big data, researchers need to work with civil society partners to advocate for fairness, accountability, and transparency in the ethical production of datasets. Despite data being the most important way, we look at society, the impact of data, the impact of big data on vulnerable people is rarely put at the forefront.

In their search for bigger data, some researchers argue that individuals and groups should take greater risks to better understand society. Today's challenge is to elevate disinformation research to an academic standard that guarantees openness, public interest, while denying

privileged and restricted access to data that undermines the field as a whole. The new methodological standards include involving engineers, community partners and civil society in creating data pipelines, based on the ethical principles of the Internet Researchers Association, including encouraging meaningful informed consent at all stages of research.

It is essential to strike a balance between the benefits of big data and protecting individual rights and privacy. Ethical regulations and practices can play an important role in managing these risks.

To understand more about **potential problems with using big data**, watch the **video!**

## 2.3 Critical thinking as the ultimate tool in fighting fake news

### The importance of developing critical thinking in modern society

**Critical thinking** is the ability to objectively evaluate and analyze information and ideas, consider arguments and evidence, find flaws in logic and reasoning and reach conclusions based on reason and solid evidence. It is a targeted and active process of critical reflection and evaluation of information.

In today's society, surrounded by an overwhelming amount of information and news, developing critical thinking is essential. Critical thinking teaches us to evaluate and validate information before accepting it as absolute truth, thus helping to protect us against media manipulation and disinformation. It helps us make informed decisions, solve complex problems and gain a deeper understanding of the world around us. In addition, developing critical thinking can help us act more autonomously and responsibly in the learning process, preparing us for the challenges of today's society.

By developing critical thinking, we will be able to objectively analyze and evaluate the information we receive and distinguish between fact and fiction. This ability helps us become immune to media manipulation and the spread of disinformation. Through critical thinking, we can examine claims made in messages and information and evaluate the quality and effectiveness of sources. We can ask who the creator of the information is, what their intentions are, and whether there is evidence or support for their claims.

The importance of developing critical thinking in modern society is essential for informed and active participation in everyday life. The ability to critically evaluate information enables informed decision-making in areas as diverse as politics, health, the environment and the economy. In addition, critical thinking helps us solve the complex problems we face in society because it allows us to consider different perspectives, identify viable solutions and make rational decisions.

In short, developing critical thinking is very important to combat fake news and disinformation in modern society. Being able to objectively evaluate and analyze information helps us protect ourselves and others from manipulation.

## 2.4 Strategies for identifying manipulation

### 2.4.1 Analyzing context and hidden motivations

When dealing with news or information, it is important to analyze the context in which it is presented and to be aware of possible hidden motivations of the sources.

Here are some things to consider:

**Time context:** It is important to understand when the information was published. Sometimes news can be manipulated to create a certain impact or influence public opinion at a certain time.

*Example: If during the election campaign there is a news story accusing a candidate of corruption, it is important to ask whether it is intended to affect the outcome of the election.*

**Social and political context:** Every piece of information is influenced by the social and political environment in which it is presented. It is important to be aware of these influences and to ask how the objectivity of the information might be affected.

*Example: If we are reading a news story about a controversial law, we need to be aware that different interest groups may present different information to advance their point of view.*

**Hidden motivations:** Sometimes information sources may have hidden motivations or personal interests in conveying certain messages. It is important to assess who stands to gain or lose from a piece of information and ask why they might present it in a certain way.

*Example: A company that produces organic products may have an interest in denigrating competing products by promoting false information about them.*

Analyzing the context and the hidden reason helps us to be more critical and to constantly question why a particular piece of information is presented and what its consequences might be. This ability allows us to avoid falling into the trap of manipulation and rely on valid and objective information.

We must verify that the information presented is supported by solid evidence. We may seek additional sources to confirm the information or consult with experts in the field to verify the validity and accuracy of the information presented.

When evaluating the veracity of a piece of information, it is essential to check whether there is a correlation between the piece of information and the evidence. This helps us determine if the information is supported by facts and if it is consistent with reality. Here are some important aspects in this regard:

- **Searching for credible sources:** To verify the correlation between information and evidence, it is important to search for credible sources and consult multiple sources of information. Sources such as scientific publications, trusted organizations, subject matter experts and reputable media sources are usually more reliable.
- **Assessing the quality and objectivity of the information:** We need to analyze the quality of the information and assess whether it is objective or biased. It is recommended to check whether the information is supported by concrete data, scientific research or other relevant sources.
- **Checking original sources:** Sometimes information is presented through secondary sources or interpretations and correlation with evidence can be distorted. In such cases, it is helpful to seek out the original sources and directly evaluate the evidence presented.
- **Critical analysis of arguments and reasoning:** We must pay attention to how information is presented and argued. If there is a significant discrepancy between information and evidence, it is important to ask why this discrepancy exists and to assess whether the arguments presented are valid and logical.

*Example: If a news story claims that eating chocolate reduces the risk of cancer, we need to check the studies and scientific research that support this claim and assess whether there is a direct correlation between the information and the evidence.*

Checking the correlation between information and evidence helps us avoid mistaking information or falling into the trap of manipulation. By using a critical and fact-based approach, we can make informed decisions and form a more accurate perspective on reality.

### 2.4.2 Identifying faulty logic and emotional manipulation

We must pay attention to the logic presented in the information and identify possible logical errors or emotional manipulations. We can look for weak arguments, exaggerated extrapolations, or manipulation by using emotions to influence our perception and judgment. It

is important to be critical and use these strategies to protect ourselves from information manipulation and make informed and rational decisions.

In the information-rich world we live in, it's important to be able to spot the faulty logic and emotional manipulation used in the speeches or arguments presented to us. These techniques are often used to influence our opinions and decisions in a subtle way and can distort reality. Here are some important things to consider in this regard:

2.5 **Identifying faulty logic:** A faulty logic is an error in thinking and reasoning that can lead to wrong or unwarranted conclusions. Some common examples of faulty logic include circular argument (when the conclusion is used as a premise), personal attack (attacking the person instead of valid arguments) or overgeneralization (drawing general conclusions based on individual cases).

2.5 **Effects of emotional manipulation:** Emotional manipulation involves using emotions to influence our opinions and decisions. This can be done through appeals to fear, guilt, sympathy or exaggerated excitement. Emotional manipulation can distract from rational arguments and create an impulsive reaction at the expense of objective reasoning.

2.5 **Be aware of emotionally charged language:** Sometimes the words and phrases used in communication can be intentionally chosen to elicit strong emotional reactions. Such emotionally charged language can be used to manipulate or distort the original message. Watch out for words that create polarization, intensify conflict or provoke intense emotional reactions.

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2.5 Ask yourself who is benefiting from the manipulation: The moment you notice faulty logic or emotional manipulation, it is important to ask yourself who is benefiting from this. Who might benefit from manipulation and what might be the motivation behind it? Sometimes manipulation is used to promote certain interests or gain some benefit and recognizing this helps us to critically evaluate the information we receive.

*Example: A politician uses strong emotional rhetoric and generalizes accusations about a political opponent without presenting concrete evidence. In this case, spotting the emotional manipulation and lack of solid arguments helps us to be more skeptical and scrutinize those claims.*

## 2.5 Developing a critical attitude

### 2.5.1 Acknowledging your own prejudices

It is important to recognize that we have our own prejudices and be aware of them in the process of evaluating information. We need to be honest with ourselves and ask how these biases can influence our perception and judgment. By becoming aware of these biases, we can try to overcome our limitations and evaluate information in a more objective way.

Prejudices are preconceived judgments or opinions we have about certain people, groups, or ideas, based on stereotypes or generalizations. They can influence how we interpret and evaluate information and affect our objectivity and judgment. To be more effective in combating biases, it is important to acknowledge that we have them and to be aware of their impact on our thinking.

- **Self-reflection and introspection.** It is important to be honest with ourselves and examine our own beliefs and attitudes. Identifying and being aware of the biases we have helps us manage them more effectively and avoid their influences on our thinking process.
- **Education and information.** Seeking knowledge and information about different cultures, ethnic groups, sexual orientations or other social aspects can help reduce prejudice. Deeper understanding of people's differences and complexities can help open-mindedness and diminish preconceived judgments.
- **Empathy and insight.** Putting ourselves in the shoes of others and trying to see the world through their eyes helps us become more aware of how prejudice can affect those individuals or groups. Actively listening to the stories and experiences of others allows us to better understand diversity and combat prejudice.
- **Seeking evidence and objective reasoning:** When faced with information or opinions that feed into our prejudices, it is important to seek hard evidence and use objective reasoning. Critically evaluating information and checking sources can help reduce the influence of biases in the thinking process.

*Example: If we are prejudices against a certain ethnic group and we read an article that supports these prejudices, recognizing these prejudices can help us be more critical in evaluating the information presented. We can look for alternative sources, look at the facts and ask ourselves if there is a solid basis to support that opinion or if it is influenced by our prejudices.*

Recognizing and being aware of your own prejudices are important steps in developing critical and objective thinking. These skills help us to be more informed, make better informed decisions and be more open to human diversity.

### 2.5.2 Healthy skepticism and the balance of information

It is recommended that we approach the information with a healthy skepticism. We must be critical and not blindly accept everything presented to us. It is important to look for multiple sources of information, weigh the pros and cons and evaluate all parties involved in a balanced manner. Thus, we can gain a more comprehensive and clearer perspective on the topic under discussion.

By developing a critical attitude, we can become more aware and able to discern truthful information from false or manipulative information. It helps us protect ourselves from disinformation and make more informed and rational decisions in our daily lives.

Healthy skepticism is a critical and rational approach to evaluating the information we receive. In the age of digital information, it is crucial to be able to discern between truthful information and false or distorted information.

**Checking sources.** It is essential that we verify the source of the information we receive. Sometimes information may be created or shared by unconvincing sources or with hidden interests. Checking the credibility of the source and identifying its reputation can help evaluate information objectively.

**Seeking diversity of sources.** To gain a balanced perspective and avoid reporting one part of the whole, it is important to consult a diverse range of information sources. This allows us to gain different perspectives and avoid taking on a single view or biased piece of information.

**Critical evaluation of arguments.** Healthy skepticism encourages us to critically evaluate the arguments presented in the information. This involves analyzing the logic, presentation of evidence and consistency of the argument as a whole. While some people can be persuasive in presenting information, critical evaluation helps us separate fact from opinion and identify any weaknesses or inconsistencies in the argumentation.

**Checking information and facts.** Before accepting information as true, it is important to check the facts presented. This may involve looking for independent and verified sources that support

the information. Verifying information may also involve consulting experts in the field or searching for relevant studies and research.

*Example: If we receive controversial or alarming information, healthy skepticism encourages us not to automatically accept this information, but to critically evaluate the sources and verify the facts presented. We can seek alternative sources, consult with experts in the field and evaluate the reasons in a rational and balanced way.*

Healthy skepticism helps us avoid falling into the trap of information manipulation, be better informed and make wise decisions based on verified and solid information. It is important to maintain a balance between being open to new information and critically evaluating information.

## 2.6 Fake or real? - are deepfakes the new form of #fakenews?

### 2.6.1 What are deepfakes and how do they work?

**Watch the video!**

Deepfakes are advanced media manipulation technologies that use artificial intelligence to falsely create and distribute images, videos, or audio recordings that appear authentic but are actually fabricated. These can involve replacing the faces of real people with faces of other people or even with generic faces created by algorithms.

The operation of deepfakes is based on machine learning techniques known as generative neural networks (GANs). GANs consist of two main components: a generator and a discriminator. The generator is responsible for creating the fake images, while the discriminator tries to distinguish between real images and those generated by the generator.

The process of creating a deepfake generally involves the following steps:

**Data Collection:** Real pictures and videos of the person being replaced are required. The more data available, the more accurate the results will be.

**Model training:** Using machine learning algorithms, a model is trained to learn the facial features of the reference person. The model learns to recognize these features and apply them to images or videos.

**Generating the deepfake:** The model uses the information learned in the previous step to generate images or videos that credibly present the replaced face. The algorithm tries to get as accurate an understanding of the texture and movements of the face as possible.

**Refinements and adjustments:** Sometimes the initial deepfakes may have some imperfections or appear unnatural. In this case, additional adjustments are made to make the result as authentic as possible.

It is important to note that deepfakes can be used for various purposes, some of which are fun or creative, such as in the film industry or entertainment. However, there is also a dark side to deepfakes, as they can be used for harmful purposes such as spreading disinformation, blackmail or political manipulation.

*Example: An example of a deepfake would be creating a video that appears to feature a famous person giving a controversial speech or making false statements. By using deepfake techniques, the video can appear authentic and believable which is difficult for the average person.*

Watch **the video!**

### 2.6.2 The impact of deepfakes on society and democracy

The impact of deepfakes on society and democracy can be significant and present serious challenges.

**Disinformation and discredit.** Deepfakes can be used to create fake and manipulated content that can spread disinformation and discredit individuals or institutions. By replacing faces or altering speeches, one can create the impression that a person has done or said something that is not true, leading to confusion and reputational damage.

**Undermining trust in information and communication media.** By creating deepfakes and spreading them online, public trust in information and news sources can be undermined. Once people become aware of the existence of deepfakes, they may become more skeptical and less trusting of media content which can weaken democracy and endanger objective truth.

**Impact on electoral and political processes.** Deepfakes can be used for political purposes in order to manipulate public opinion and influence election results. By creating fake videos or messages of politicians, deepfakes can create confusion and undermine the integrity of electoral processes.

**Psychological and social effects.** Viewing deepfakes can have an emotional and psychological impact on people. They can cause anxiety, confusion and discomfort as people can become unsure of the authenticity of the information they receive. Deepfakes can also fuel conspiracy theories and social polarization, amplifying divisions and mistrust between different groups.

**The need for countermeasures.** The negative impact of deepfakes has determined the need to take countermeasures. These may include the development and use of deepfake detection technologies, educating the public about deepfake recognition and prevention, collaboration

between online platforms to remove fake content and promoting transparency around digital manipulation.

*Example: In a political context, deepfakes can be used to create fake videos of political candidates or leaders, confusing voters and undermining the democratic process. This can seriously damage public confidence in politicians and the institute.*

### 2.6.3 Identifying deepfakes

- **Searching for suspicious visual and audio clues**

Looking for suspicious visual and audio clues is an important aspect in combating deepfakes and assessing the authenticity of media content. While deepfakes can be highly sophisticated, there are some clues we can look for to identify potential manipulations. Here are some relevant aspects:

**Inconsistencies in facial or body movements.** In a deepfake, there may be inconsistencies in the facial or body movements of the replaced real person. These can be difficult to notice at first glance but by carefully analyzing the details, we can notice imperfect synchronizations between facial expressions and the movements of the rest of the body.

**Visual artifacts or technical deficiencies.** Deepfakes can sometimes exhibit visual artifacts or technical deficiencies. These can be seen in the quality of the image or in details such as the shapes of faces, shadows, lighting or reflections. Some deepfakes may appear blurry or distorted in certain areas.

**Discrepancies in sound and speech.** When evaluating video or audio recordings, we may look for discrepancies between sound and lip movements or other auditory clues. In deepfakes, perfect timing between sound and images can be difficult to achieve, so subtle discrepancies can occur.

**Checking the source and context.** It is important to verify the source and context in which the suspicious media was shared. Sometimes deepfakes can be associated with unconvincing sources or shared in a context that raises suspicions. Investigating the source and assessing its credibility can provide important clues about the authenticity of the content.

*Example: If we receive a video or audio recording that appears to depict a controversial event or statement, we may look for suspicious visual and audio clues. We can check if facial and body movements are consistent, if there are obvious visual artifacts or discrepancies in sound and speech. We may also investigate the source of the content and the context in which it was distributed to obtain additional information.*

Looking for suspicious visual and audio clues requires attention and careful analysis. Combined with other content verification and evaluation techniques, these clues can help identify potential deepfakes and protect against the spread of disinformation.

● **Comparison with trusted sources**

When we are exposed to questionable news or information, it is important to compare it with reliable sources to gain a clearer and more objective perspective. Here are some relevant aspects:

**Identifying the trusted source.** First, we need to identify reliable sources in the field: well-known news publications, research organizations or experts in the field. It is important to consult sources that have a solid reputation for providing accurate and objective information.

**Checking the credibility of the source.** Once we have identified a reliable source, we need to verify its credibility. We can look for information about the source's reputation and expertise, as well as its standards of journalism and research. Reliable sources tend to provide well-documented information, mention the sources used and present balanced points of view.

**Comparison of information.** After obtaining information from a suspicious source, we can compare it with information provided by trusted sources. We can look for discrepancies or inconsistencies between information and wonder why there are significant differences. If a reliable source supports or denies certain information, it is more likely that it is closer to the truth.

**Evaluating multiple perspectives.** To get a more balanced perspective, it is recommended to consult several reliable sources. This allows us to compare different interpretations and understand the diversity of opinions and points of view. Consistent information provided by multiple reliable sources increases the likelihood of getting an accurate and clear picture of the situation.

*Example: If we are exposed to a controversial news or claim, we may seek reliable sources in the field, such as trusted news publications or research organizations. We can verify the credibility of these sources and compare their information with that provided by the suspect source. If there are significant discrepancies or reliable sources provide consistent information that contradicts the suspect statement, it is more likely that the suspect statement is false or distorted.*

**Consulting experts and specialized technologies**

When we are faced with dubious information or suspicious content, we can call on experts and specialized technologies to help us assess its authenticity and veracity.

**Consulting experts.** By consulting experts, we can benefit from their knowledge and their ability to evaluate information. They can provide clues and solid arguments as to the authenticity and veracity of the information.

**Use of specialized technologies.** These technologies may include content analysis, speech recognition, data analysis and tamper detection algorithms. There are fact-checking and audio or video manipulation detection tools that can help identify deepfakes or other types of fake content.

*Example: If we are faced with suspicious content, we can call on experience in content analysis or in the specific field of that information. They can assess the authenticity and veracity of the information based on their knowledge and experience. We may also use specialized technologies, such as audio or video tamper detection tools, to confirm the authenticity of content.*

## 2.7 Legal regulation and involvement of online platforms

Legal regulation and involvement of online platforms play a key role in combating false information and disinformation. Here is more relevant information:

**Legal regulation.** Legislation is an important tool in the fight against false information. Governments and international organizations are developing laws and regulations to encourage accountability of online platforms and to impose sanctions for the spread of disinformation. These regulations may aim at transparency in advertising, the identification and removal of false or manipulated content and the protection of users against information manipulation. By setting clear standards and responsibilities, legal regulation can help reduce the impact of online disinformation.

**Involvement of online platforms.** Online platforms such as social media and search engines play a crucial role in combating disinformation. They can implement policies and measures to prevent and combat the spread of false information. For example, they may use detection algorithms and filters to identify and limit the visibility of manipulated content. They may also work with fact-checking organizations to assess the accuracy of information and flag false or manipulated content. The involvement of online platforms in promoting verified information and reducing the impact of disinformation is essential in the fight against this phenomenon.

**User responsibility and digital education.** Users of online platforms also have an important role to play in combating disinformation. Digital education and developing a critical approach to information can help users recognize and avoid fake content. The ability to evaluate sources, verify information and be aware of manipulative tactics helps raise awareness and reduce the impact of disinformation. Users must be cautious in sharing and trusting information, be willing to update their knowledge and be actively involved in promoting a safer and more authentic online environment.

*Example: Some countries have passed laws that require online platforms to report and remove fake or manipulated content and provide transparency about political advertising. In addition, the platforms work with fact-checking organizations to evaluate and verify the accuracy of information. Through their active involvement and adoption of appropriate measures, online platforms can play an important role in promoting a safer and more authentic online environment.*

## 2.8 Mathematical weapons of disinformation

### 2.8.1 How math can be used for manipulative purposes

Mathematics itself is a field based on logical reasoning, rigor and the search for truth. However, mathematical concepts and tools can be misused or misinterpreted to create a false impression or deceive people.


*Figure 22 - https://ethicaljournalismnetwork.org/fake-news-people-believe-can-done-counter*

In this chapter, we will explore how mathematical concepts and methods can be used in a manipulative way to create and spread disinformation. We will understand how figures and calculations can be presented in a distorted way to mislead and influence public perception.

Mathematics can be used for manipulative purposes in several ways.

**Marketing and advertising:** Companies often use mathematical principles to manipulate consumer behavior. They may use mathematical algorithms to analyze data on customer preferences and behavior and create personalized marketing strategies to influence their purchasing decisions.

**Politics and opinion polls:** Mathematics can be used to manipulate the results of opinion polls or elections. For example, by selecting the right sample, manipulating the questions or using specific calculation methods, the results can be influenced in a certain way to promote a certain political agenda or to manipulate public opinion.

**Finance and Investments:** Mathematics is used extensively in the world of finance to manipulate the markets and make a profit. Trading in stocks, bonds and other financial instruments is based on complex mathematical models that can be manipulated to generate profits.

This includes using high frequency trading (HFT) algorithms or manipulating the markets through illegal practices such as insider trading[35]

**Gambling:** Mathematics is essential to gambling and sportsbooks and casinos use it to manipulate players' chances of winning. They can adjust the probabilities and structure of the games in such a way that they always have a mathematical advantage over the players. For example, roulette and slots are designed to consistently generate profits for casinos.

It is important to note that using mathematics for manipulative purposes is unethical and can have negative consequences for individuals or society as a whole. Manipulating people's information or behavior can affect their decision-making and lead to unfair results or harm.

It is essential to critically approach mathematical information, examine the sources and methodologies used and consult multiple reliable sources to avoid being misled by mathematical misinformation.

### 2.8.2 Mathematics and fake news

Much of what we know or think we know about what's going on in the world, we learn from reading the news. But these days "news" means something different than it did in past generations. Most of what we read today are articles on the Internet—everything from casual blog posts to meticulously analyzed stories on national and international news sites. The transition of journalism from print to screen does not inherently mean that what we read is any less truthful than it was before. However, this technological transformation has enabled a less obvious but still extraordinarily influential economic transformation: the 'datafication' of the journalistic industry. The page views and clicks we all sprinkle on the Internet are the digital 'fertilizer' that feeds a thriving garden of disinformation and fake news. Following the financial incentives involved in the contemporary news cycle, we need to understand the alarming extent to which data, unseen to most of us, created by our actions and activities, fundamentally shapes what we read every day and threatens the bulwark of traditional journalistic standards.

[35] Insider trading is the trading of a public company's stock or other securities based on material, non-public information about the company. In various countries, some types of insider trading are illegal

As Noah Giansiracusa, professor of mathematics and data science at Bentley University, points out in his new book, *'How Algorithms Create and Prevent Fake News: Exploring the Impact of Social Media, Deepfakes, GPT-3 and More'*, the rise of digital media and advances in machine learning techniques have raised the stakes of the information game to critical levels. By eroding the line between fact and fiction, he says, these platforms have inadvertently created 'a technological arms race', increasing both the speed with which fake news spreads and the extent of its influence.

In his book, Giansiracusa explains how artificial intelligence (AI), a branch of computer science that creates machines capable of thinking and acting like humans, has contributed to 'our current quagmire of media fakery'. Specifically, he focuses on deep learning algorithms, the specialized programs that enable computers to identify patterns among diverse and voluminous data sets.

Every time we visit social media sites like Facebook and YouTube, we leave a 'digital crumb trail' behind. This information is fed into artificial intelligence algorithms based on what we like, share, read and watch during our visits to predict and influence our future behavior. These programs determine which ads and posts appear in the Facebook news feed and which videos appear in the YouTube recommendations list. From a business perspective, the ultimate goal of these companies is to maximize user engagement and therefore maximize their profits.

This is important because we tend to think of Google, Facebook and YouTube as benign search engines and social media platforms rather than what they are: digital advertising companies.

For example, Google generated nearly $150 billion in ad revenue in 2020, accounting for 80 percent of the company's total revenue—and Facebook and Google together account for nearly 20 percent of the global advertising industry. In addition to providing space to advertisers on its own platform, Google also acts as a 'virtual real estate agent' by placing ads on third-party websites for a fee. And it is through this latter mechanism that fake news has flourished. Given the sheer size of Google's network (the company serves more than 30 billion ad impressions daily), these deals are driven by algorithms that prioritize quantity over quality. As a result, Google has unknowingly served billions of ads to and from fake news companies providing them with revenue streams in the process.

### 2.8.3 How Fake News Goes Viral — Mathematical Explanations and Studies

'NASA Runs a Child Slave Colony on Mars!', 'Photos Taken by a Chinese Orbiter[36] Reveal an Alien Settlement on the Moon!', 'Shape-Shifting Reptilian Aliens Who Can Control Human Minds Run the US Government!'

What accounts for the staggering popularity of such stories? Are we a particularly gullible species? Maybe not – maybe we're just overwhelmed. A simple model of how news spreads on social media, published in June 2017 in Nature Human Behavior, indicates that almost anything can go viral. Even in a perfect world where everyone wants to share real news and is able to evaluate the veracity of every claim, some fake news would still reach thousands (or even millions) of people, simply because of information overload. It's often impossible to see, let alone confirm everything that enters one's news feed. 'If you live in a world where you're bombarded with junk – even if you're good at discriminating – you're only seeing part of what's there, so you might be sharing the wrong information', explains computer scientist Filippo Menczer of the University Bloomington, Indiana (IU), one of the co-authors of the model 'The competition is so tough, the good stuff can't make it to the top'.

It may happen that in the virtual world, the beauty of a photo or the persuasiveness of an article will help spread a 'meme'—the term Menczer and his colleagues use for a link, video, phrase, or other unit of online information. The researchers demonstrate, however, that only three inexorable factors can explain a network's inability to distinguish truth from falsehood in memes, even if individuals can. These are the following: the enormous amount of information out there, the limited time and attention people can devote to scrolling through their news feeds and choosing what to share and underlying social network structure. All three conspire to spread some of the worst memes at the expense of the best.

**Mathematical models for exploring how memes spread on social media** are known as agent-based models because they require the active participation of 'agents', a technical term for individuals. These models come from an older class of simulations that study how diseases spread in a community. Think of a diagram where each agent is represented by a point or node and is connected by lines to other nodes, representing friends or followers

[36] Orbiter is a space flight simulator that allows space flight enthusiasts to realize their dream of flying

Let's imagine that Mary is 'infected' by a flu virus or fake news. Then, she can transmit the contagion along these links to her friends Joe and Jim by shaking hands or sharing the meme with them. Joe and Jim could in turn spread the contagion to their contacts and so on.

But 'information is not a virus', warns University of Southern California researcher Kristina Lerman: while we're usually dealing with one flu strain at a time or at worst several, the number of memes competing to infect us is staggering. Modelers incorporate this abundance by imagining that each person has a screen on which they see incoming memes. The model assigns a value to the probability that Mary will create and share a new meme—let's say, a video she made about her dancing cat—and also does this for all possible new memes from all other users. Because new memes increase the total amount of information in the system, these metrics measure the information load experienced by those watching their screens.

Once Mary sends a message, it appears on the screens of Jim, Joe and others, who in turn choose to create their own memes or broadcast one of their own from their feeds.

Using an earlier version of this model, Menczer and others at IU showed in 2012 that only a few memes will go viral even if all memes are equally 'contagious'—that is, equally likely to be shared each time when viewed. The memes in **both models roughly follow what's called a 'power law'**, meaning that **the chance of a meme being tweeted or otherwise shared a certain number of times falls as an inverse power of that number**. For example, a meme is four times less likely to be tweeted twice than once. 'If you look at the distribution of images on Flickr or articles on Facebook or hashtags on Twitter, they all have power laws', says Menczer. Still, memes that reach thousands of recipients are surprisingly common.

In 2014, mathematician James Gleeson of the University of Limerick in Ireland and others demonstrated a mathematical similarity between models of the kind invented by Menczer, among others and 'sand piles'[37]—canonical systems for what physicists call 'self-criticality organized'. If one drips sand gently onto a flat surface, it will pile up until its slopes reach a critical angle. A few extra grains of sand may not cause anything noticeable but suddenly another grain will trigger an avalanche: the equivalent of a meme going viral. Gleeson's analysis suggests that the intrinsic properties of the system, as opposed to the particularities of a meme, drive virality.

[37] Modelul  The Abelian sandpile model is the most popular name for the original model Bak–Tang–Wiesenfeld. The model BTW was the first discovered example of a dynamical system exhibiting self-organized criticality. It was introduced by Per Bak, Chao Tang and Kurt Wiesenfeld in a 1987 paper

In their paper, Menczer, Xiaoyan Qiu and others at IU examine what happens **if some memes are more contagious than others**. They find that **if information load is low and attention span is high, more attractive memes prevail**. Real-time attention tracking and information overload, obtained from Twitter and Tumblr data, however, indicate that **in real life, the sheer amount of information usually overwhelms us**. 'We shouldn't assume that the reason junk spreads are because people like it or because they can't tell the difference', Menczer explains. 'You could assume people would know the difference and yet fake things would go viral, simply because of information overload'.

Historically, the spread of disinformation has been modeled using the same epidemic models used for common viruses.[38]

In the paper[39], the authors proposed a differential equation-based model of fake news diffusion and studied the model parameters that keep a fake news story circulating in a social network after it has appeared. Separately, the authors suggested what parameters would cause the spread to disappear over time. In their paper[40], the authors modeled the onset and decline of engagement for fake news articles on Twitter as two subsequent cascading events affecting a Poisson process. After training the model's parameters with fake news Twitter dissemination data, the authors show that the model predicts the evolution of fake news engagement better than linear regression or models based on pooled Poisson processes.

In the paper *'The effect of fact-checking on viral hoaxes: a model of disinformation spreading in social networks'*,[41] the authors simulated the spread of a hoax and its debunking at the same time. They built on a model for the competitive spread of two rumors to describe the competition between believers and fact-checkers. Users become fact-checkers through the broadcast process if they already know the news is not true or because they decide to check the news themselves. The authors also considered forgetting, making the user lose interest in fake news with a given probability. They studied the existence of thresholds for the probability of fact-checking that guarantee the complete elimination of fake news from the network and

[38] Newman, M.E.J. Spread of epidemic disease on networks. *Phys. Rev. E* **2002**, *66*, 016128
[39] Shrivastava, G.; Kumar, P.; Ojha, R.P.; Srivastava, P.K.; Mohan, S.; Srivastava, G. Defensive Modeling of Fake News through Online Social Networks. *IEEE Trans. Comput. Social Syst.* **2020**, *7*, 1159–116
[40] Murayama, T.; Wakamiya, S.; Aramaki, E.; Kobayashi, R. Modeling and Predicting Fake News Spreading on Twitter. *arXiv* **2020**, arXiv:2007.14059
[41] Tambuscio, M.; Ruffo, G.; Flammini, A.; Menczer, F. The effect of fact-checking on viral hoaxes: A model of spreading misinformation in social media. In *Proceedings of the 24th International Conference on World Wide Web* ; Association for Computing Machinery: New York, NY, SUA, 2015.

demonstrated that such a threshold does not depend on the rate of spread, but only on the credulity and probability of forgetting of users[42] and comparing different strategies fact-checking on different network topologies to limit the spread of fake news.[43]

In their paper *'Who Shares Fake News in Online Social Networks?'*[44] the authors proposed a mixed-methods study: they captured the personality of users on a social network through a questionnaire and then modeled agents in their simulations according to the questionnaire to understand how different user personalities affect the spread of the epidemic. In the paper,[45] the authors studied the influence of online bots on a network through simulations, in an opinion dynamics framework.

In practical terms, the results suggest that reducing the impact of bots and increasing the presence and impact of authority figures are key to limiting the spread of fake news.[46] This may involve educating users of online social networks (OSNs) to recognize bot behavior or implementing some form of automated recognition that flags suspicious activity patterns as bot-like.

The impact of influencers is also very relevant as they significantly accelerate the spread of news online and amplify the 'small world effect'.[47] By preventing influencers from falling prey to fake news and rather increasing their involvement in stopping fake news and/or promoting its debunking, we can reduce the spread of fake news. The above methods would further contribute to the healthy improvement of interactions and communication of opinions through social media.

[42] Tambuscio, M.; Oliveira, D.F.M.; Ciampaglia, G.L.; Ruffo, G. Network segregation in a model of misinformation and fact-checking. *J. Comput. Soc. Sci.* **2018**, *1*, 261–275
[43] Tambuscio, M.; Ruffo, G. Fact-checking strategies to limit urban legends spreading in a segregated society. *Appl. Netw. Sci.* **2019**
[44] Burbach, L.; Halbach, P.; Ziefle, M.; Calero Valdez, A. Who Shares Fake News in Online Social Networks? In Proceedings of the ACM UMAP, Larnaca, Cyprus, 9–12 June 2019
[45] Ross, B.; Pilz, L.; Cabrera, B.; Brachten, F.; Neubaum, G.; Stieglitz, S. Are social bots a real threat? An agent-based model of the spiral of silence to analyze the impact of manipulative actors in social networks. *Eur. J. Inf. Syst.* **2019**, *28*, 394–412
[46] Furini, M.; Mirri, S.; Montangero, M.; Prandi, C. Untangling between fake news and truth in social media to understand the COVID-19 Coronavirus. In Proceedings of the 2020 IEEE Symposium on Computers and Communications (ISCC), Rennes, France, 7–10 July 2020; pp. 1–6
[47] Watts, D.J.; Strogatz, S.H. Collective dynamics of ’small-world’ networks. *Nature* **1998**, *393*, 440–442

## 2.9 Use of statistics in fake news

*There are three kinds of lies: lies, damned lies, and statistics.*

(Mark Twain)

### 2.9.1 Statistics and fake news

The misuse of statistical data fuels the spread of fake news, manipulating public perception by exploiting the credibility that numbers often confer.

Statistics hold immense power as a tool for understanding complex phenomena and making data-driven decisions. However, this power is like a double-edged sword when it falls into the hands of malicious individuals who exploit it to create and propagate fake news, lending credibility to their misleading narratives.

Watch **the video!**

But why do statistics play such a vital role in the manufacture of fake news? The answer is relatively simple: those who seek to deceive know that statistics have a unique ability to give credibility to any content, thus making their fakes seem more convincing to the unsuspecting public.

More than 90% of fake news articles contain a graph or some kind of mathematical data. This statistic sounds alarming, but the more alarming thing is that, as Charles Seife, professor of journalism at New York University, said, 'We think of numbers as something inhuman, but the numbers we use in our daily lives are very human and are created, manipulated and presented by humans'.

According to Seife, there are several common ways people use numbers and graphs to mislead. Even when percentages are supported by polls, it's important to determine what they represent. We have to ask who was surveyed and what kind of specific questions were asked. We need to make sure we fully understand what is being assessed or measured.

**Watch the video !**

Also, graphics can easily be used to mislead. 'By changing the scale of a graph, we can make large effects appear small and small effects appear large', says Seife. Graphs can also start at a point other than 0, which is where most graphs start, to make a change seem more significant than it is. Alternatively, graphs that show data where small changes have a large impact could intentionally start at 0 to make significant changes appear small. Statistics and graphs are powerful tools that can quickly communicate information, but they are only as good as the people who create them.

That is why the prophetic words of the famous British writer HG Wells ring truer today than ever: *'Statistical thinking will one day be as necessary to effective citizenship as the ability to read and write.'* (HG Wells). To effectively vet content—especially as it relates to statistics—we need to cultivate and refine our statistical thinking skills, as Wells urged.

This effort is critical to developing the ability to read, interpret and understand basic statistical information such as graphs, summary measures, tables, and more.

When we are gifted with these skills, discovering statistical manipulations becomes a more manageable task.

### 2.9.2 Methods of distortion and manipulation of statistical data

**Watch the video!**

Statistics do not lie but statistical data can be manipulated incorrectly, intentionally or unintentionally and can distort reality. The purpose of statistics is to provide objective information and support correct decision-making. However, statistics can be used to manipulate information in many ways.

In the world of disinformation and fake news, manipulating statistics is a common tactic. Malicious individuals can distort and misinterpret statistical data to support a particular narrative or mislead the public.

Here are some examples of how statistics are used for this purpose.

- **Selective Choice:** Selectively choosing data that supports the desired conclusion while ignoring conflicting data. By presenting only a subset of the available data, you can distort the big picture and mislead others.
- **Manipulation of graphs and charts:** Graphical presentation of data can be manipulated to mislead. Inappropriate choice of scaling, choice of reference point, or use of truncated graphs can lead to misinterpretation of data.

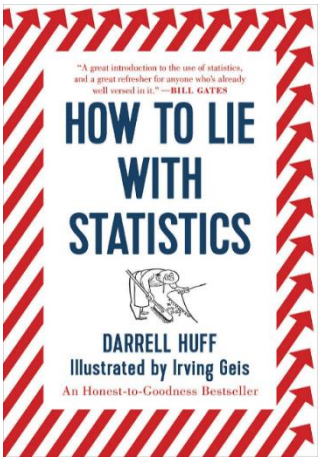



*Figure 23 - https://thetrustedweb.org/top-books-about-fake-news-and-misinformation/*

*Case study #01*

A blogger uses statistical, visual and textual tricks to claim that the number of abortions in Portugal dropped dramatically after its legalization.

In addition to several problems in the text - such as the omission of critical data that prevents deeper analysis - it presents a misleading graph.

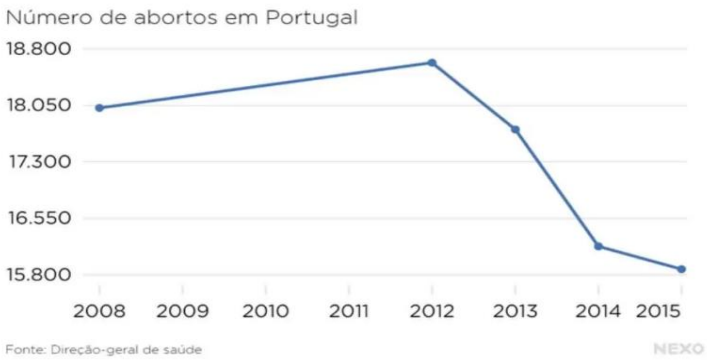



*Figure 24 - https://pvmulher.com.br/o-que-aconteceu-apos-10-anos-de-aborto-legalizado-em-portugal/*

In this case, we notice a common trick used in graphics to confuse the viewer: truncating the y-axis at the bottom.

Notice that the y-axis starts at 15,800, misleading the public into thinking that a few years after 2008, the number of abortions dropped to zero.

The graphs below demonstrate how manipulating the axes can easily change our reasoning. Note that both charts were created using the same data but on different Y-axes - a completely DIFFERENT pattern emerges.

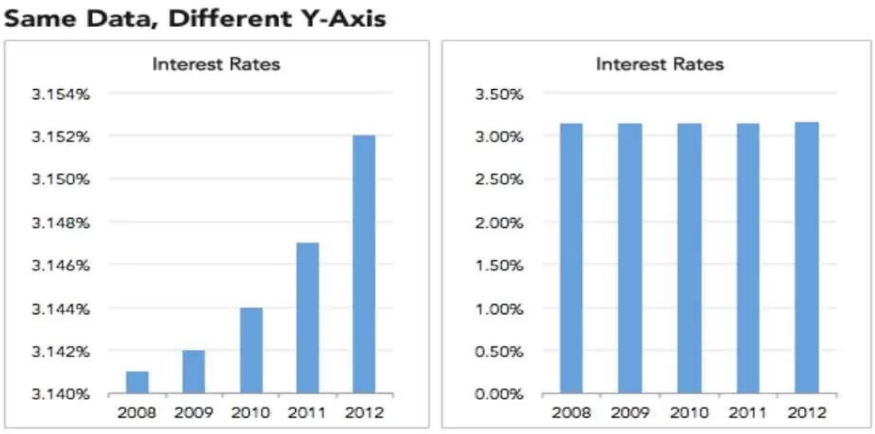



*Figure 25 - https://www.assignmentexpert.com/homework-answers/english/question-262267*

This technique inflates data and conveys distorted ideas of reality, especially to the unsuspecting.

Another crucial problem identified was that the legalization of abortion occurred between 2007 and 2008, right when the graph (x-axis) begins, suppressing crucial data from the years before legalization.

Furthermore, population size, a vital variable for this type of analysis, was not taken into account.

We are not saying that the number of abortions increased or decreased after legalization. Instead, we use this case as an example of misrepresented data intended to mislead the reader.

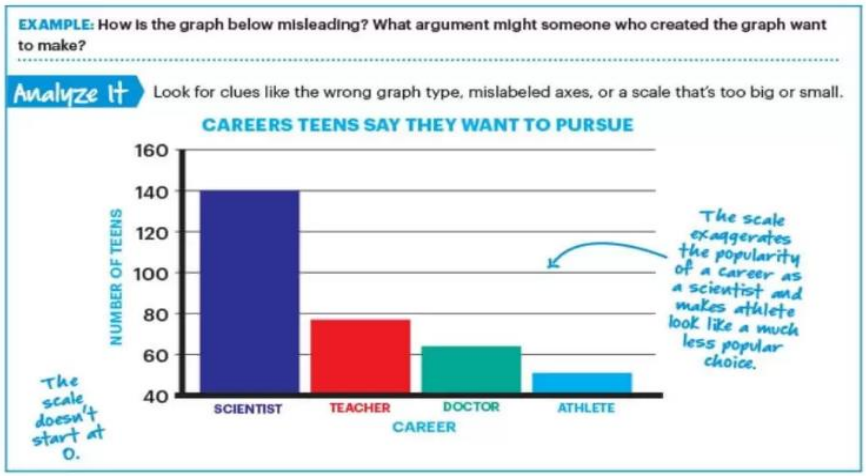
*Case study #02*

Scholastic MATH magazine **published** an article in September 2017 entitled:

**Fake news, fake data: how bad and misleading the graphics that feed fake news can be.**

In this article, the authors exemplify how small changes in graphics can easily mislead us.

In this example, we discover the same **problem** as previously mentioned: **unnecessary truncation of the base of the y-axis.**



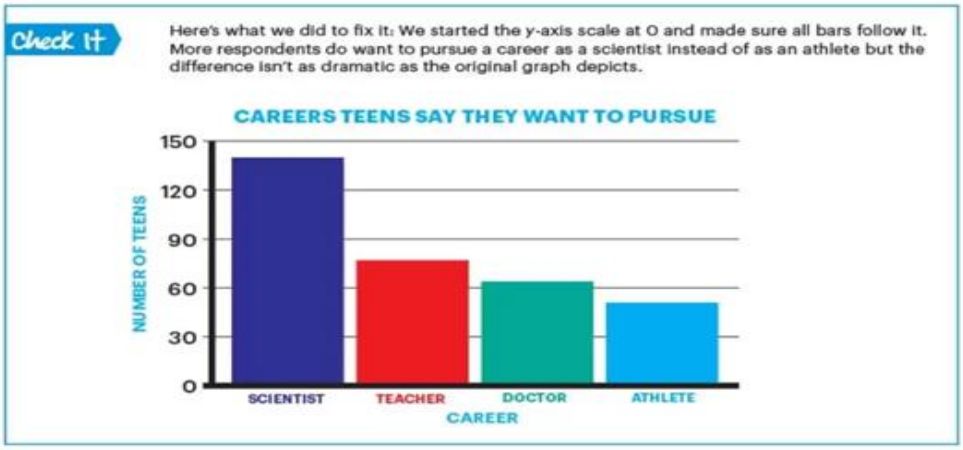




*Figure 26 - https://math.scholastic.com/issues/2017-18/092517/fake-news-fake-data.html?language=english#1120L*

- **Correlation versus causation:** Presenting a statistical correlation between two variables as evidence of causation when a direct causal relationship cannot exist. This oversimplification can lead to false conclusions and misinterpretations.

*Case study*

A website/book called Spurious Correlations provides excellent examples to remind us of the saying: 'Correlation does not imply causation'.

The phrase describes that we cannot accurately determine a cause-and-effect relationship between two events or variables by observing their correlation or association.

The book contains several examples of highly correlated variables that clearly lack any causal relationship.

In one example, a nearly perfect 99% correlation was found between the variables 'divorce rate in Maine' and 'margarine consumption per capita'.

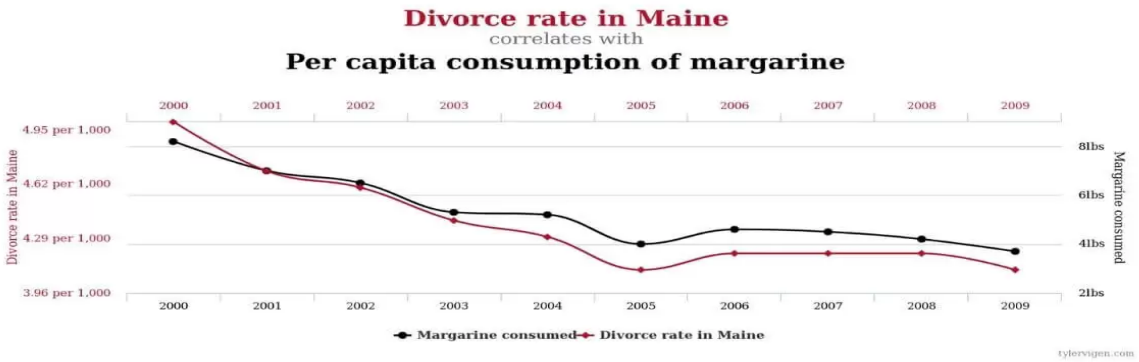



*Figure 27 - spurious-correlations*

**Correlations can be misleading**.

In this extreme case, it should be obvious that even if there is a very high correlation between two variables, this does not imply a causal relationship. In other words, one does not cause the other.

- **Biased sampling:** selecting a sample that is not representative of the population you are studying. If the sample is not chosen randomly or if certain groups are intentionally excluded, the results may not accurately reflect the entire population.

***Example**: If we do a statistical study on the results of the baccalaureate exam, introducing only the technological high schools into the sample, the results will be very poor, often indicating a percentage below 50%.*

If we include only theoretical high schools in the sample, the results will be much higher.

If the one who analyzes the results of the study does not know the real context, these results can be very distorted in relation to reality.

- **Manipulation of statistical measures:** Choosing specific statistical measures or methodologies that support a particular narrative while ignoring alternative interpretations. For example, using relative percentages instead of absolute values to exaggerate differences or focusing on a particular statistical measure that supports the aimed outcome.
- **Use of confusing or ambiguous terms:** Statistics may be presented using confusing or ambiguous terms to mislead. For example, using relative percentages instead of absolute numbers can create a distorted impression of the magnitude of a problem.
- **Omission of context:** Statistics may be presented without appropriate context to mislead. Excluding relevant information or ignoring other important variables can lead to misinterpretation of the data.

### Suggested exercises:

**Use this information to find the inaccuracies in the graphs that follow. Record your work and answers on our answer sheet.**

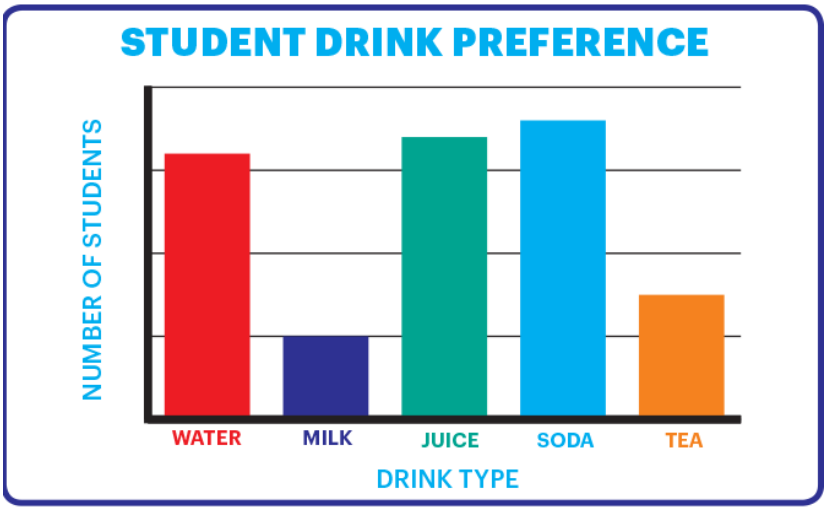



*Figure 28 - https://math.scholastic.com/issues/2017-18/092517/fake-news-fake-data.html?language=english#1120L*

1

**A.** What is wrong with the bar graph above?

**B.** How does the error affect the appearance of the graph data?

What argument might the creator of the chart be trying to make?

**C.** How would you repair or modify the chart to make it accurate?

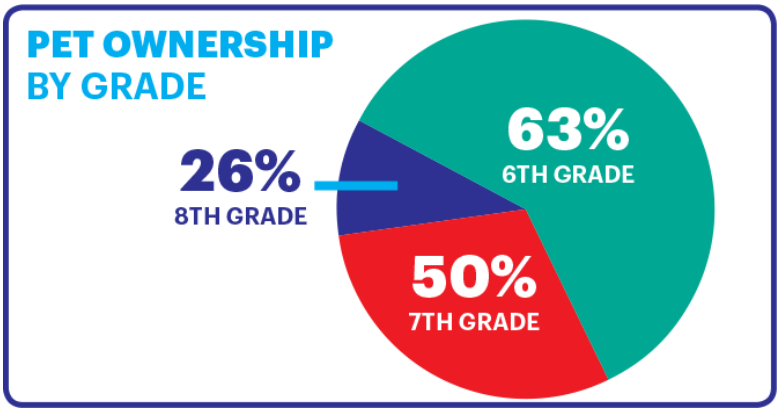



*Figure 29 - https://math.scholastic.com/issues/2017-18/092517/fake-news-fake-data.html?language=english#1120L*

2

**A.** What is wrong with the pie chart above?

**B.** How do problems affect the appearance of chart data?

What argument might the creator of the chart try to make?

**C.** How would you repair or modify the chart to make it accurate?

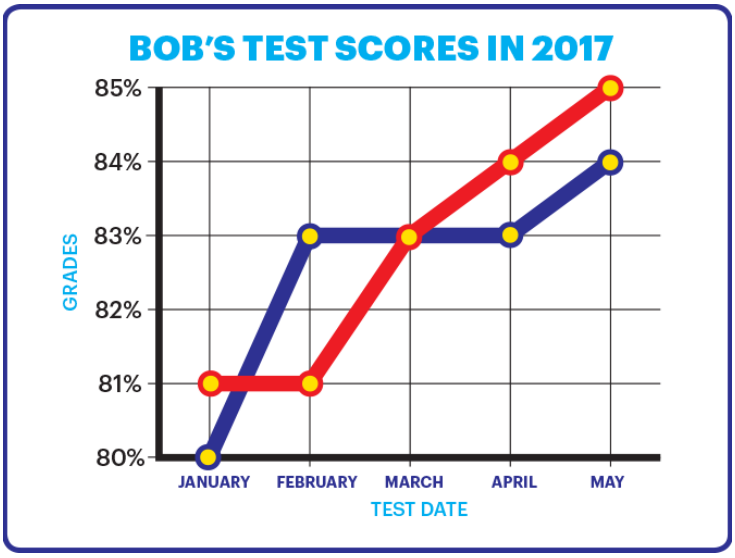



*Figure 30 - https://math.scholastic.com/issues/2017-18/092517/fake-news-fake-data.html?language=english#1120L*

3

**A.** What is wrong with the two-line graph above?

**B.** How do problems affect the appearance of chart data? What argument might the creator of the chart try to make?

**C.** How would you repair or modify the chart to make it accurate?

It is important to be aware of these tactics and be careful in evaluating the data and statistics presented. It is always recommended to analyze the source, methods and context in which the statistics are used to obtain a correct and complete understanding of the information.

For a better understanding of how statistics can be misleading,
**watch a real story in the video**:

### 2.9.3 The impact of statistical data manipulation on public understanding

**Watch the video!**

We will look at how the misuse or manipulative use of statistics in fake news can affect public understanding. We will discuss the consequences of these practices on decision-making, public opinion and perceptions.

**Watch the video!**

The practice of manipulating information through the use of statistics can have a significant impact on public understanding. Here are some effects of these practices on the public:

**Misperceptions and wrong conclusions:** Manipulation of statistics can lead to misperceptions and wrong conclusions. When information is presented in a manipulated or distorted way, the public can reach conclusions that do not correspond to reality. This can affect informed decision-making and lead to negative consequences.

**Confusion and mistrust:** Manipulation of statistical information can create confusion among the public. When there are discrepancies between different sources or when data is presented

in a contradictory manner, the public may have difficulty understanding and interpreting the information correctly. This may lead to mistrust of the data and information presented.

**Influencing decisions:** Manipulation of statistical information can influence public decisions in undesirable or unfair ways. When data is presented in a manipulated way, the public can be misled about the risks, benefits or impact of a particular phenomenon or event. This can lead to decisions that are not in the best interest of the public or that do not take into account the realities and real implications.

**Skepticism of data and information:** The manipulation of statistical information can lead to an increased level of skepticism among the public. When the public is repeatedly exposed to manipulation practices, they may become more cautious and reluctant to accept and believe the data and information presented. This can affect trust in authorities, media and institutions, which can have negative consequences for society as a whole.

To counter the negative impact of statistical information manipulation, it is important to promote statistical education and literacy. The public must have critical skills to properly evaluate and interpret statistical information. Transparency, clear communication and the use of reliable sources are also essential to counter manipulative practices and promote a more accurate and correct understanding of statistical information.

### 2.9.4 Accurate assessment of the statistics

- **Identification of the source and method of data collection**

To properly evaluate the statistics presented in the news, it is important to identify the source of the data and understand the method used to collect it. We must assess the credibility of the source and the objectivity of the data collection process in order to properly appreciate the statistical information.

Identifying the source and method of data collection is a crucial aspect in evaluating information and understanding it correctly. Here is more information on this topic:

**Data Source:** Identifying the source of the data is essential to assess the credibility and reliability of the information. It is important to know who collected the data and what expertise or interests that source may have. Trusted sources can be government organizations, academic

institutions, independent research organizations or recognized international organizations. It is important to avoid relying solely on unreliable or partisan sources.

It is essential to evaluate the source of the data to determine the credibility and expertise of that source. Here are some things to consider:

a. Authority and reputation of the source: Check that the source has a solid reputation in the field and it is recognized as an authority in that field.
b. Objectivity and neutrality of the source: It is important to identify whether the source has a potential conflict of interest or a specific agenda that could influence the presentation of the data.
c. Experience and competence of the source: The professional knowledge and experience of the source in that particular field can provide an indicator of the reliability and quality of the information provided.

**Method of data collection:** How the data was collected can influence its validity and relevance. There are several methods of data collection such as surveys, experiments, direct observations, administrative data, etc. It is important to know the method used in data collection and understand how it may affect the results. For example, data collected through a survey can be influenced by the way the questions are asked or the way respondents answer.

**Data transparency and reliability:** Another important component is data transparency and reliability. It is necessary to know how data was collected, what sample was used, how errors were handled and how it was analyzed. It is also important to provide information about the margins of error or limits associated with the data presented. The greater the transparency and reliability of the data, the easier it is for the public to evaluate and understand it correctly.

**Sample representativeness:** We must ensure that the sample used in data collection is representative of the population or phenomenon in question. It is important to assess whether the sample is large and diverse enough to obtain relevant and generalizable results.

- **Analysis of conclusions and interpretations**

We must analyze the conclusions and interpretations drawn on the basis of statistical data. We must verify that the conclusions are supported by the data presented and that the interpretations are valid and consistent with the results obtained. We also need to be aware of possible misinterpretations or exaggerations that can be used to manipulate public perception.

- **Comparison with other sources and critical interpretation of the statistics presented**

To get a more objective perspective, we need to compare the statistics presented with other reliable sources. If the data does not line up with the other sources or if there are significant discrepancies, we should be cautious about accepting it as true. We must also interpret the statistics presented critically, understand the context and ensure that they are not distorted or exaggerated.

Comparison with other sources and critical interpretation of presented statistics are key aspects in evaluating and understanding statistical information.

- **Consulting experts for an objective assessment:** When faced with complex or conflicting statistical data, it is useful to seek opinions and assessments from experts in the field. They can provide an objective perspective and help to interpret the data correctly, thus avoiding the pitfalls of statistical manipulation.

By applying these strategies and being aware of the manipulation of statistics in fake news, we can become more informed and resilient facing disinformation. Developing critical thinking and the ability to evaluate and check the information will help us make informed choices and promote a healthier and more responsible information environment.

Consulting experts is an important step in the process of objectively evaluating information. Experts can provide a specialized perspective based on their knowledge and experience in the field. Here's more information about consulting experts:

**Identifying relevant experts:** Identify experts who have expertise in the area of interest or the specific issue you want to evaluate. These experts may be academics, researchers, experienced professionals or recognized practitioners in the field.

**Expertise and Credibility Assessment:** Check experts' qualifications, experience and achievements to determine if they are credible and have expertise in the field. Consider their previous publications, studies, recognitions and collaborations.

**Communicating with experts:** You can contact experts through conferences, academic events or through professional institutions or organizations. Questions and discussions with experts can provide a deeper understanding of the topic and clarify the information you are evaluating.

**Objectivity and independence:** While consulting experts, ensure that they are objective and independent in their assessment and supply of information. Be aware of possible conflicts of interest or influences that may affect their objectivity.

**Corroboration of multiple experts:** If there are differing opinions among experts, you can consult multiple specialists to gain multiple perspectives and better understand the pros and cons.

**In conclusion**, by properly evaluating statistics, including identifying the sources and methods of data collection, checking the representativeness of the sample and carefully analyzing the conclusions and interpretations, we can increase our awareness.

Watch: **How to lie with statistics**
and
**Misleading Statistics**

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# CHAPTER III

The aim of this chapter is to give an overview of what Non-Formal Education is with a special focus on Gamification and Game-Based Learning. These two non-formal teaching methods appear to be quite effective for the aim of the BEST guide since they allow youth workers to use these innovative teaching methods to create engaging lessons on the topic of fake news. Moreover, Gamification and Game-Based Learning techniques have been proven to enhance student's motivation and critical thinking skills, the latter being essential in molding the next generation to be active citizens. The first section of this chapter will provide a thorough definition of what Non-Formal Education is and what its main features and uses are. In the second section we will focus on the key elements and benefits of Gamification as a non-formal teaching method. This section will analyse what are the similarities and differences between Gamification and Game-Based Learning, as well as underlying their main aspects, features and benefits. In the third section of this chapter we will explore how Gamification and Game-Based Learning can help us in reaching the goal of this project, explaining in further detail how these teaching methods can be applied in education and how they can contribute to increasing the motivation and critical thinking skills of young people. The following section will allow youth workers to understand how to design their own gamified activities following a 4-step approach. Lastly, in conclusion of this chapter we will provide youth workers with a series of Gamification and Game-Based Learning activities that will encourage the involvement of young people in learning about the topic of fake news.

## 3.9.4 What is non-formal education: key elements and growing application trends

In a rapidly evolving world, education is no longer confined to traditional classroom settings. Non-formal education has emerged as a dynamic and adaptable alternative, catering to diverse learning needs and environments. Understanding non-formal education is paramount for the target group of the project "Be Smart, Be Tolerant!", as youth workers play a pivotal role in shaping the learning experiences of young individuals.

This first section aims to explore the key elements of non-formal education and shed light on its ever-expanding application trends, taking into account the unique needs and challenges faced by youth workers in their quest to foster smart, tolerant, and well-rounded learners. As we explore how non-formal education is shaping the educational world, we'll delve into its core components, its methodological foundation, its role in fostering lifelong learning, and its relevance in today's society.

### 3.1.1 Non-formal education and its difference from Formal and Informal education

Non-formal education is a term used to describe any organized educational activity outside the established formal system that is intended to serve identifiable learning clientele and learning objectives.

Non-formal education clearly finds its own definition in contrast with the one of **Formal education**, meaning the hierarchically structured, chronologically graded 'education system', running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for full-time technical and professional training. Unlike formal education, which is institutionalized, non-formal education is flexible and can occur in various settings, including community centers, associations, workplace, online platforms, workshops, vocational training programs, and more. Despite the lack of institutionalization, Non formal education still shares with Formal education the elements of **intentionality**, highlighting the importance of the target group and the learning objectives within the educational experience: Non formal education is never random. The opposite applies for **Informal education**, that can be defined as the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment - from family and neighbors, from work and play, from the marketplace, the library and the mass media, etc. This

process is therefore **spontaneous** and often unintentional but can give in the lifelong learning process a similar if not stronger influence.

Several parameters can further detail the difference between formal and non-formal education. The **purpose** of Non-formal education is short-term and specific rather than long-term and general; the **content** is individualized and practical rather than standardized and academic; the clientele determines entry requirements and not the other way round; the **system** is learner-centered and flexible rather than teacher-centered and rigidity structured; **monitoring** is self-governing and democratic rather than external and hierarchical. Having characterized Non formal education, we can state that it offers a dynamic, adaptable, and learner-centered approach, which is particularly well-suited for youth workers who operate in diverse and non-traditional environments.

### 3.1.2 The Kolb Experiential Learning Cycle and Debriefing

The foundational methodology underlying Non formal education is the Kolb Experiential Learning Cycle, developed by David A. Kolb. The cycle consists of four stages: **concrete experience, reflective observation, abstract conceptualization, and active experimentation**. Within non formal educational contexts, youth workers apply this cycle to guide learners through a transformative learning journey. Research shows that this kind of active, experiential learning supports creativity, problem solving and a deeper understanding.

The process begins with a **concrete experience**, wherein learners actively engage in a real-life experience. For youth workers, this might involve organizing a community project, a team-building exercise, or an environmental awareness program. The crucial step that follows is **reflective observation**, where participants critically analyze and reflect on their experiences, articulating what they have learned and how it connects to their personal and professional growth.

Subsequently, the **abstract conceptualization** stage involves transforming these reflections into generalized concepts and principles. Youth workers facilitate discussions and guide learners to draw connections between their experiences and broader theoretical frameworks. This stage encourages the development of critical thinking and the ability to transfer knowledge

and skills to new situations.

The cycle culminates with **active experimentation**, where learners apply their newfound knowledge and insights to practical situations. For youth workers, this often means enabling young individuals to implement their learning in real-life scenarios, thereby reinforcing the learning process.

**Debriefing** is a pivotal element in unfolding the Kolb Experiential Learning Cycle. Usually conducted through meaningful questioning, debriefing sessions provide a structured and safe environment for participants to share their insights, lessons learned, and emotions experienced during the learning journey. This collective reflection aids in processing the experience, deepening understanding, and enhancing the transferability of learning to other aspects of life.

In the context of non-formal education, debriefing is the linchpin of the entire methodology. It enables youth workers to guide learners through the Kolb cycle effectively and ensures that the learning process is meaningful, transformative, and aligned with the goals of the program. Debriefing sessions serve as a cornerstone of engagement, offering participants a chance to connect emotionally and cognitively with their experiences, making the educational journey more impactful and relevant.

### 3.1.3 The Key Elements of Non-Formal Education

To comprehend non-formal education comprehensively, we will in this section explore its core elements and detail for each of them what consequence it has on the role of the facilitator.

**It is participatory**: The group of participants are involved actively in the process of learning. When you are actively experiencing a situation and actively participating in your own learning process the long term impact of it is definitely going to last longer, as it is a deeper process.

As a consequence for the facilitator, when you plan your activities you should bear in mind to have enough activities where the participants will be engaged and they could participate fully. Allow more space for the participants to debate, reflect or work with the concepts presented.

**It is learner centered**: A non-formal session comes with activities that answer the learning needs of the participants and is adapted to them during the learning process. We learn differently and this means we need “tailored size for every participant”.

As a consequence for the facilitator, before planning a session you should be aware of the participants' level of experience, background, expectations and needs. This of course could be challenging when you have very diverse groups: when trying to cover all their individual needs makes deciding on a specific activity/method impossible. This is why you need to find the best strategies to address the problem.

**It is flexible**: Based on the process, on the context, on the participants' needs, the program and the structure of a non-formal education session could change. It is open and adaptable to what is happening on the way with the group.

As a consequence, facilitators need to pay a lot of attention to the group during the activities; if the group needs more time for discussions, for finalizing a task, for extracting the learning points out of it, you should provide this time to them because otherwise it can disrupt their learning process and fail to reach its aim. It is very important to think flexible from the beginning; to know that maybe your plan will not go as you plan it, and that the group process will be different than the one you envisioned and rather think about plan B or C in different situations.

**It is voluntary**: This means all the participants are in the process by their own choice and it is not imposed by any other external source or factor. Voluntary means also that it is based on the participants' motivation and expectations and if they don't get what they want they could also withdraw during the process.

As a consequence for the facilitator, it's important to let the participants know about this aspect and to emphasize it during the process – if some of the participants will not want to continue, let them go and don't try to convince them to stay. Because it is going to create a wrong environment and the participants will stay for the wrong reasons and it could also influence the group dynamic. Explore the participants' needs and also request feedback after each session or daily, and based on these elements produce changes in the program

**The participants evaluate the results of non-formal education**: Non-formal education is focused on the participants' process and is adapted to their learning needs, expectations, background and it could be evaluated only by the beneficiaries of it. It is not the task of the facilitator/trainer to evaluate the success of his sessions because in fact this can be assessed only based on the participants' own assessment of their learning outcomes and plans for the future. They are the only ones that could in fact measure this process.

As a consequence, at the end of the training, facilitators need to allow space and plan activities that are going to help the participants look at the process of the training and assess their own outcomes. This could be done through group methods (in plenary, or flipcharts/posters with different aspects to be measured and to be filled by the group), in smaller groups (sharing and feedback giving) or individually (with assessments form or questionnaires).

**It targets competencies (knowledge, attitudes, skills)**: 3 dimensions can develop in parallel and don't have an order, but they are related. In non-formal education the learning objectives usually target aspects from all 3 dimensions. For example: An interculturally competent person will have knowledge about what is culture, identity, cultural differences, stereotypes, prejudices, etc; will have attitudes like: tolerance open mindedness flexibility, curiosity, and skills such as: active listening, empathy, attentiveness, intercultural communication, etc.

As a consequence, when facilitators set up the learning objectives for the session, they need to pay attention to all the NFE dimensions and make sure they are targeting all of them. Even when planning to focus on one more than the others, they should also be included on a certain level.

**Think about learning zones**: In the comfort zone, no specific challenges are encountered. A person enters the stretching zone when it confronts something new. In the stretching zone, questions are made and changes of perception, attitude or behaviour are possible. Here, a person can feel uncertain and vulnerable but the most learning process happens in this stage because people need to face the new, to question, to get used with it, and in time they will expand their own comfort zone by including these new elements gained from the stretching zone. If the stretching goes too far, the participants might get into the panic zone. They are very vulnerable and panic causes blocking. Learning becomes impossible.

As a consequence, facilitators need to push the participants for several reasons. Main key points are: to support them in processing their experience there; to expand their comfort zone; to make them aware of their progress. At the same time, you should be careful not to push them too much into doing something they don't feel comfortable with.

### 3.1.4 Growing Application Trends

As the educational landscape continues to evolve, several application trends within non-formal education are emerging, each with distinct implications for youth workers:

**Online and Digital Learning**: Technology has revolutionized non-formal education, making online and digital learning a prominent mode of delivery. E-learning platforms, webinars, and Massive Open Online Courses (MOOCs) have democratized access to quality education, allowing youth workers to harness the power of technology to engage with their learners effectively.

**Skills Development and Vocational Training**: Non-formal education has emerged as a primary vehicle for imparting practical skills and vocational training. The demand for a skilled workforce in various industries has pushed youth workers to become facilitators of career-oriented and job-relevant programs.

**Lifelong Learning**: The perpetually shifting landscape of knowledge and technology has elevated the importance of lifelong learning. Youth workers, aware of the evolving nature of knowledge, advocate for and support the development of lifelong learning habits among the youth they serve.

**Community Engagement**: Non-formal education often thrives in community-based settings, fostering social cohesion and addressing local needs. Youth workers are at the forefront of community-based programs, harnessing the power of collective learning and shared purpose to create a sense of belonging among young learners.

**Global Citizenship Education**: Non-formal education has become an instrument for nurturing global awareness, tolerance, and social responsibility. Youth workers are instrumental in guiding young individuals towards a deep understanding of global issues, encouraging active participation in global conversations, and promoting a green and critical mindset.

## 3.2 What is Gamification: main features and benefits

In this chapter, we seek to explain what **Gamification** and **Game-Based Learning** are. We will give a general definition to both concepts and we will analyse what the main differences between these two concepts are, as even though they are intertwined they are not to be considered synonyms. We will then present different features of both Gamification and Game-Based Learning methods, stressing the importance of not considering these two concepts as something exclusively related to the use of internet and ICT tools, but also perfectly implementable through the use of analogical and more traditional features.

### 3.2.1 What is Gamification?

Nowadays, Gamification is a topic of discussion and analysis among experts and professionals across various domains, encompassing psychology, sociology, management, marketing, pedagogy, and computer science. It's evident that Gamification extends beyond education. Let's explore various definitions to understand its essential components and key aspects. When examined collectively, these definitions offer a broader and more thorough understanding of Gamification. A widely accepted definition, originating from a conference paper authored by an international and diverse team of scholars, characterizes Gamification as '**the use of game design elements in non-game contexts**' (Deterding et alii, 2011a). This definition provides a solid foundation for grasping the core concept, emphasizing that elements commonly found in games can be introduced into other activities. The authors also introduce related concepts like 'gamefulness,' 'playfulness,' 'serious games,' and 'gameful design,' enriching the conceptual framework surrounding Gamification. Another conference paper by the same scholar defines gamification as an 'umbrella term for incorporating video game elements (as opposed to complete games) to enhance user engagement and experience in non-game services and applications' (Deterding et alii, 2011b). Yu-kai Chou, a Taiwanese-American entrepreneur, describes gamification as “the craft of deriving all the fun and engaging elements found in games and applying them to real-world or productive activities”. He views it as “design that places the most emphasis on human motivation in the process. In essence, it is Human-Focused Design” (Chou). This contrasts with 'function-focused design,' which prioritizes process efficiency with minimal concern for participant experience. As a practitioner and not an academic, Chou highlights the application of Gamification for productive purposes.

Gamification can transform an otherwise dull or unappealing yet necessary task into a more tolerable or, ideally, enjoyable activity.

### 3.2.2 Gamification and Game-Based Learning

Gamification and Game-Based Learning are related terms, yet they shouldn't be mistaken as identical, even if they might seem so to someone unfamiliar with these ideas. Although they both involve applying game design principles, they have nuanced differences. Grasping this distinction will enhance your ability to use a range of methods and tools outlined in this guide. Game-Based Learning (GBL) is often defined simply as the use of games to facilitate learning (refer to Bloom 2009, for example). Essentially, it's a method where learning occurs through playing a game itself. When comparing GBL with Gamification, the key difference lies in how GBL typically involves the utilization of actual games (fully-developed activities), while Gamification focuses on integrating game design elements. However, from our perspective, a more accurate way to differentiate the two is by considering which aspect of learning each concept addresses. Gamification impacts the learning process, encompassing verification and assessment, by making it game-like. On the other hand, GBL encompasses diverse ways for students to engage with the content, delve into concepts, apply freshly acquired knowledge, and develop and hone new skills.

Some examples of gamifying the learning process can be:

- the teacher giving learning badges instead of grades;
- students designing their own avatars or characters; their progress will be reflected by the development of these avatars or characters (e.g. the avatar gains a new item or the character improves one of its skills, when the student reaches a learning goal);
- the teacher using tools such as Kahoot or Quizziz instead of a traditional test.

On the other hand, examples of GBL can be:

- students learning about the challenges in managing a city through SimCity;
- students playing card games to study the topic of probability in mathematics;
- students go on digital treasure hunts using tools like Actionbound to learn about a certain cultural aspect of their city.

As demonstrated by the examples above (Sige Textbook, 2022), Gamification provides the ability to influence the learners' journey, their advancement, and how their performance is evaluated. Instead of receiving grades, they earn badges. Rather than a simple acknowledgment of course completion, they can enhance their avatar. Instead of following a textbook, they engage with a narrative. On the other hand, game-based learning (GBL) revolves around how students attain, engage with, process, and apply knowledge and skills. Instead of working through equations devoid of context, they calculate their chances of winning a poker hand with specific cards. Instead of reading about a historical event, they simulate it in the classroom to gain insight into the perspectives of the participants. Instead of being told about the challenges of balancing energy requirements, environmental considerations, and budget constraints, they actively attempt to manage it using SimCity.

### 3.2.3 Digital and analog

Before we explore the various potential forms and approaches, it's crucial to clarify a possible misunderstanding. When some people hear the term 'game,' they often immediately associate it with computers and/or consoles, essentially referring to video games. For many, games are strongly linked to the digital world. This automatic association is reflective of our current age, which is increasingly dominated by information and communication technologies (ICT). Given the events of the past few years, particularly the **widespread adoption of digital tools and ICT in response to the COVID-19 pandemic**, it's understandable why this perception prevails. The rapid shift toward using computers in conjunction with online platforms has led some educators to believe that video games (especially multiplayer ones) are the only surviving form of gaming - paralleling the notion that digital tools (especially internet-based ones) are the only 'modern' way of teaching and engaging with students. However, this perception is far from accurate. While the realm of video gaming is vast, it's not the sole gateway to gaming or utilizing games for educational purposes. Non-computer-based games constitute a surprisingly diverse domain with a substantial community of enthusiasts, many of whom advocate for the merits of what might be viewed as traditional or even outdated formats. Interestingly, some genres of video games originated from non-computer-based forms of entertainment. For example, traditional pen-and-paper role-playing games (RPGs) served as the foundation for computer role-playing games (CRPGs). Numerous board and card games have also been adapted or reimagined for

computers and, more recently, mobile devices. **These domains, analog and digital, coexist and evolve in parallel.** Game design elements commonly seen in Gamification are similarly utilized in both 'analog' and digital settings.

The intention is not to diminish the potential or value of video games. Particularly when combined with the capabilities provided by the Internet, they offer a remarkable range of formats and cover an incredibly broad spectrum of subjects. Furthermore, ICT allows for the integration of unique digital tools like virtual/augmented/mixed reality (VR, AR, or MR). Additionally, online communication removes various physical barriers (such as distance or the availability of suitable space) that could impede interaction between players—or, in our context, learners and educators.

The main point conveyed above is to emphasize that implementing Gamification and Game-Based Learning does not automatically mean placing learners in front of computers or providing them with smartphones and VR devices. While we have numerous options if we choose to go down that path, we can equally opt to keep them away from screens. In fact, all the forms of Gamification and GBL described below have, in one way or another, been embraced and/or adjusted for usage in video games, allowing us to envision them in both analog and digital environments. The range of game-related methods is such that **you can decide the extent of ICT integration in your teaching** and select the appropriate tools. Indeed, with some effort and creativity, you'll discover a wealth of ideas even if you decide to completely abstain from digital technologies. Therefore, educators who prefer approaches such as outdoor and experiential learning, which prioritize interaction with nature over technology, are not excluded from utilizing Gamification and GBL.

### 3.2.4 Main features of Gamification and Game-Based Learning

In this segment, we provide a thorough examination of different features that Gamification and game-based learning (GBL) can adopt. We aim to offer brief descriptions and, in certain instances, provide examples that you may recognize. We emphasize and uphold the differentiation between Gamification and GBL, aiming to strengthen the understanding of the previously emphasized distinction. To begin, we will delve into Gamification.

# GAMIFICATION

## Points

A very straightforward approach to incorporate Gamification into assessment or student progress tracking is by implementing a system of points and associated rules for earning them. Points can serve as an alternative to traditional grades or, in a more practical sense for educators within formal education systems, can complement them. Using points instead of grades may not initially appear as a groundbreaking concept, as many universities already employ this method when assessing papers. However, envision a comprehensive scoring structure where every aspect of a student's work—ranging from active engagement in class, timely completion of assignments, peer teaching, teamwork, proposing activities, delivering presentations, expressing and defending viewpoints, critical analysis of sources, to organizational skills within the classroom—is assessed and aggregated to acknowledge not only their performance but also their involvement and contribution within a peer group. The simplicity of the point system is remarkably powerful, offering almost boundless adaptability. The scoring mechanism can mirror the significance attributed to each facet of the learning process or incentivize specific attitudes and behaviors in a highly focused manner compared to a traditional grading system.

## Ranking/Leaderboards

Whenever there are points and clear, impartial regulations for acquiring them, the possibility of incorporating leaderboards arises. These prove to be an excellent motivational tool, particularly when working with learners who have a competitive nature and are eager to measure their progress against their classmates. A key advantage is the flexibility to have multiple leaderboards corresponding to various assessment criteria. For example, you can display rankings for exceptional test performance, active participation in discussions, helpfulness towards peers, extensive reading, proficiency in a specific practical skill, and so forth. This approach allows for a more detailed and comprehensive evaluation of the group's overall performance. Additionally, you can establish a system for amalgamating diverse rankings into a unified leaderboard, especially if you wish to recognize a well-rounded achievement.

**Badges**

Similar to practices already implemented in scouting organizations, students can receive badges upon mastering a specific skill or reaching a particular milestone in their learning journey. For instance, you could establish badges like 'History Expert' or 'Mathematics Specialist.' Additionally, badges such as 'Friendly Neighbour' could be awarded to students who assist their peers with challenging assignments. Once again, the focus is on determining the types of accomplishments or behaviors deserving recognition. Through the use of badges, you can mitigate some of the competitive aspects, as learners with the same badge are acknowledged as equally qualified, without indicating who earned it 'better' or 'faster' (though you can introduce this distinction if desired). Badges prove to be an effective method for breaking down competencies or their categories into more manageable units.

**Skill trees**

A skill tree serves as a tool for illustrating the progress of learners and is a remarkably effective way to demonstrate how gaining specific skills necessitates or facilitates the acquisition of others. Let's consider a scenario where you're instructing a class of aspiring CNC operators at a vocational school (Sige Textbook, 2022). Implementing a skill tree can assist them in comprehending the prerequisites they need to meet and the skills they need to acquire before operating an actual machine. At the foundational tiers of the tree, fundamental aspects like 'understanding health and safety protocols' and 'identifying different types of machines' would likely be placed. Progressing upwards, elements like 'familiarity with control layouts' or 'knowledge of operational procedures' could be positioned. Upon mastering all essential skills, students unlock the next node or level on the tree, allowing them to progress to more advanced topics. Skill trees can be integrated with badges or even composed of them. For instance, a badge could be conferred upon completing a section of the curriculum represented by a cluster of interconnected skills within the skill tree.

**Missions/Quests**

If you aim to engage your students in specific tasks or a defined set of assignments, consider presenting these activities in the format of a mission or quest. Ideally, these missions should be designed as integral components of a larger process, where each task builds upon the previous

one or contributes significantly to overall advancement. Missions and quests naturally align with storytelling (more details on this below). Consequently, they can be enriched with narrative elements. However, the essence of a successful mission lies in clearly stating the objective and purpose. Even if the goal is not easily measurable, students should grasp the expected outcome, the reasons behind the task, and how it integrates into the broader scope of their learning journey.

**Storytelling**

Storytelling is considered a fundamental element in Gamification by many practitioners, including Yu-kai Chou. Our inherent affinity for captivating narratives implies that we are more likely to engage in an activity if it's embedded within an appealing story. This narrative element provides the activity with meaning beyond its basic function, sparking our interest and motivating us to participate. For instance, instead of simply instructing students to solve equations, why not immerse them in the role of British cryptanalysts during WWII? The equations they solve could unveil the correct settings for Alan Turing's device, decrypting German communications. This shift transforms the task from mere number crunching to a mission to safeguard convoys from Nazi U-boats, complete with a time constraint akin to the situation at Bletchley Park (Sige Textbook, 2022). The beauty of storytelling lies in its ability to intertwine and package various tools and methods neatly within an engaging narrative. You can craft simple stories for specific exercises or construct an expansive story arc guiding students throughout the entire curriculum, turning the entire course into a grand adventure. Missions represent distinct assignments, extensive quests encourage perseverance and long-term dedication, while badges and skill trees reflect and steer students' progress along the journey. There are countless ways to integrate and blend diverse Gamification elements under the umbrella of a compelling story. Leveraging learners' fascination with popular culture motifs is another effective strategy. For instance, if you have advanced physics students who are avid Marvel comic book and film enthusiasts, why not challenge them to theorize about space-time and time travel by immersing them in the roles of Tony Stark and Doctor Strange, attempting to reverse the damage caused by Thanos? (Sige Textbook, 2022). Additionally, you can tap into your creative side and devise original ideas. This approach allows for a seamless and purposeful learning process design without the need to force an existing story to fit, which can sometimes feel forced and artificial. While it does require more effort, it enables a high level of cohesion, purpose, and efficiency in the learning process you're crafting.

### Avatars and Characters

Students can be tasked with creating avatars or constructing characters that will represent them throughout their learning journey. Avatars typically emphasize the visual aspects, encompassing appearance, physical features, clothing, and more. On the other hand, characters focus on a wider array of traits, described through 'attributes' that cover physical aspects (e.g., strength, agility, endurance) and mental attributes (e.g., courage, focus, patience, spirituality), and can also reflect specific skills or combinations of skills. Avatars and characters serve various purposes. They can visually track progress, where acquiring competence results in the avatar gaining enhanced clothing or the character improving an attribute. Successful learners often derive greater satisfaction from witnessing their avatar's progression than from simply seeing top grades associated with their name. Moreover, avatars can accentuate the outcomes of success or failure in a secure manner, shifting from a real person to a virtual character. For example, if a student faces challenges during a chemistry experiment and fails, their avatar might have singed eyebrows from an imaginary explosion (an event that hopefully didn't occur in reality) (Sige Textbook, 2022). Advancing to a higher level in a language course might enhance the student's character 'communication' attribute, enabling interactions with a different fictional race in a fantasy universe. Utilizing avatars and characters aligns well with storytelling, skill trees, and badges. However, they can also be effectively employed without these additional elements. At times, the development of a character itself creates a compelling story, achieving the goal of engaging learners without the need for elaborate constructs involving narratives, characters, missions, or other complexities.

## GAME-BASED LEARNING

### Board games

Classic games, embodying a nostalgic style of gaming, boast an extensive fan base. A casual observer might recall games like checkers or Monopoly, but this just scratches the surface. BoardGameGeek.com, a popular online compendium for gamers, meticulously categorizes thousands of titles by genre, topic, and mechanics. It even encompasses an 'educational games' category, including over 8500 titles. Whether these games provide accurate knowledge or effectively aid learning is a subject open to discussion since the website is primarily focused on

entertainment rather than science. Nevertheless, numerous game designers have made efforts to infuse educational aspects into their creations. With some exploration, you can find many titles explicitly designed for educational purposes. Board games span a vast array of subjects. Even when focusing on relatively popular titles, one can discover games related to biology, environmental science, chemistry, history, geography, economy, medicine, politics, or space exploration (some covering multiple topics). For example, the highly-rated 'Oceans' allows players to delve into marine biology. In 'Terraforming Mars,' cards reference specific physics, chemistry, and biology phenomena, along with technologies that can be developed using them. Another acclaimed game, 'Brass: Birmingham,' is an economic strategy game set in the historical backdrop of the industrialization era (Sige Textbook, 2022). In a 'Nature' article, a team led by a Professor of Evolutionary Biology at the University of Oxford reviews various board games centered around Darwin's theory, highlighting particular praise for 'Evolution,' released in 2014, for its sophisticated biology content, capturing essential aspects of the evolutionary process, suitable as a teaching aid for ages ten and up (Sige Textbook, 2022). Similar to other Gamification and GBL formats, board games offer remarkable flexibility. They can range from very simple to incredibly complex and everything in between. Besides the board, these games may employ various physical components such as pawns, miniature figures, cards, tokens, dice, chips, and player boards. Some games rely primarily on a set of rules or mechanics for their dynamics, known as 'Euro' games, while others use storytelling to steer players' interactions and behavior, often referred to as 'American' or 'Ameri' games in gaming circles.

**Card games**

Much of what applies to board games and their potential for educational use can be paralleled with card games. Card games offer an alternative to those looking to avoid computer-based activities and are often more accessible and readily available than board games. While simple card games using a standard 52-card deck can teach concepts like probability in mathematics, a more diverse range of educational applications emerges when you consider creating custom decks unrelated to standard playing cards. In the realm of gaming, cards frequently serve as components in various game types. One could argue that many board games have card games integrated into them, as seen in the case of 'Terraforming Mars.' However, there are titles primarily or almost exclusively based on cards. For instance, the 'Timeline' series games challenge players to arrange historical events in the correct sequence (Sige Textbook, 2022).

Numerous trivia-type games are also suitable for testing general knowledge. Cards provide an easy-to-handle medium and are adept at representing relationships between various elements, encompassing chronology and causality. Additionally, they are highly portable, and setting up many games requires minimal resources. Moreover, recreating or customizing a deck of cards, even a unique one, is simpler compared to most other types of components (although advancements in 3D printing are gradually diminishing this barrier).

**Other tabletop games**

Board games and card games are commonly categorized as a subset of a broader classification known as tabletop games. We mention the tabletop category briefly to emphasize the presence of other variants, like games utilizing miniature figures and replicas to represent characters and the setting. Warhammer, a widely recognized example, represents a system of wargaming with a loose connection to fantasy literature, involving players pitting their armies against one another. Tabletop games find utility in teaching subjects where the physical arrangement of components holds significance, or when emphasizing the influence of the environment and chance—typically involving actions like dice rolling.

**Role-playing games (RPGs) and live action role playing (LARPs)**

In a role-playing game (RPG), participants take on specific character roles, which can range from historical figures to entirely fictional or fantastical beings. Much of the allure for RPG enthusiasts lies in the creative process of imagining and evolving their characters. Players then set out on an adventure, often guided by the gamemaster who facilitates the narrative, especially from an educational perspective. At each stage of the journey, they face choices regarding their characters' actions or words, and these decisions, coupled with the gamemaster's imagination and sense of enjoyment, steer the storyline's development. The crux of RPGs lies in the interactions among players. This isn't to say that there are no defined rules; in fact, there are various commonly used frameworks known as 'systems.' These systems provide a structured basis for the story, player conduct, and the outcomes of their decisions. You might be familiar with 'Dungeons & Dragons' or 'D&D,' a prime example of such a system derived from an original tabletop game published in the 1970s. Live Action Role-Playing (LARP) integrates the storytelling aspect of RPGs with physical acting, where participants physically portray their

characters and their actions. In a LARP, players not only make decisions within a group but also immerse themselves by dressing up, utilizing props, engaging with a real-world setting, and acting in character. Think of it as a battle re-enactment by an enthusiast group, except in a LARP, the outcome remains undetermined, evolving based on player choices and the established rules. LARPs initially evolved as an extension of tabletop games but have since become a distinct, vividly diverse genre. The inclusion of costumes, props, and acting introduces a potentially profound artistic expression. Coupled with an appealing venue (be it a castle, forest, old factory, or ultramodern lab), the overall experience becomes the epitome of immersion.

**Simulations**

The primary objective of this genre is to replicate a specific setting. Players are then immersed within it and assigned certain tasks or objectives. In this context, we'll emphasize video games as they have presented remarkable simulations that can be effectively applied in education. Due to advancements in programming, we now possess the capability to create highly precise and complex representations of various environments and phenomena, particularly in the domains of science, technology, engineering, and mathematics (STEM). Consequently, certain simulations developed as video games are acknowledged for closely resembling real-world experiences or simulating the challenges of specific tasks. For instance, "Microsoft Flight Simulator" and similar products are commended for their exceptional accuracy in replicating the mechanics of piloting an aircraft. Notably, these simulations also facilitate interaction among numerous players in a virtual setting, where some act as air traffic controllers. An interesting example is "Kerbal Space Program," a game where players design and launch spacecraft into space. Both aspects of this experience offer significant educational value. The design phase encompasses a wide array of real-world technologies and components, while the realistic orbital physics engine necessitates precise design for the craft to survive the flight and reach its destination. The game offers specific missions, ranging from placing satellites in orbit to sending fictional characters ("Kerbals") to other planets. Hence, the game serves as an excellent tool for learning engineering and physics principles. Another space-themed game potentially valuable for education is Eve Online. In this case, the game's merit lies not only in its context but also in its player-driven economy. The trading system mirrors NASDAQ and, in conjunction with the remarkably realistic behavior of the vast player base, offers an incredibly accurate reflection of real-world economics. Elements such as supply and demand, stock market

fluctuations, and the influence of geography and geopolitics on markets are not only present but strikingly reminiscent of real-world scenarios. As previously indicated, the crux of converting a simulation into an educational tool lies in accurately replicating an environment and/or key facets of a specific reality for players to engage and operate within. Software plays a pivotal role in this aspect, but non-computer-based simulations also hold promise as attractive and beneficial tools. An illustrative example you may be familiar with is Model United Nations (MUN). MUN events enable young individuals to engage in simulated UN meetings, comprehend the decision-making process, and grasp the formal and informal rules guiding the organization's functioning.

## 3.3 Gamified non-formal activities: increasing youth motivation and critical thinking through Non-formal activities enriched with Gamification strategies.

In this section we will examine the link between Gamification and education and what it means to concretely apply Gamification and game-based techniques to educate young people. First of all we will explore the concept of edutainment, a term that explains how some characteristics generally associated with the world of entertainment work just as well when it comes to learning purposes. Moreover, we will delve into the psychological aspects of Gamification, explaining how it works from a behavioral perspective. Finally we will exhibit the Octalysis framework, that provides a step by step fragmentation of how human motivation works from a psychological point of view. This framework is especially effective in explaining why Gamification and Game-Based Learning techniques help young people feel more engaged and motivated in learning about the topic of fake news.

### 3.3.1 Entertainment and education

At first glance, it might be challenging to immediately see the **connection between game design and pedagogy or education.** Game design seems deeply rooted in entertainment, making educators hesitant to link it with what they consider a very serious endeavor. However, multiple sources, including academic literature, provide a conceptual framework that allows us to establish a connection between games, Gamification, and education. In this section, we briefly introduce some potentially valuable terms and draw connections between them.

So, how do we transition from a "game," as defined by Encyclopædia Britannica as a "form of recreation generally including any activity engaged in for diversion or amusement," to the realms of learning and teaching? The initial link in this chain can be derived from alternative definitions of games. Marc Prensky, in his well-cited book, suggests that games, while a source of fun and play, also encompass specific rules, objectives, and outcomes (Prensky, 2001). Prensky's depiction of games implies the presence of structure and purpose - characteristics that align with what we hope to see in the process of learning and teaching. This prompts a question: **can we envision a game where the purpose is not just entertainment but also the development of specific competences?**

This idea has existed in academic discourse for a long time and is aptly termed "serious games." Building upon the works of D. R. Michael and S. L. Chen (2005), scholars like Hanif al Fatta, Mohd Zakaria, and Zulisman Maksom describe serious games as activities that prioritize utilitarian objectives like the acquisition or enhancement of knowledge, skills, and/or attitudes over mere fun, entertainment, and enjoyment (Al Fatta *et alii*, 2019). This doesn't mean serious games should lack enjoyment when played. Indeed, incorporating an element of enjoyment is one reason (though not the only one) for their use. It signifies that the entertaining aspect serves a utilitarian goal rather than being an end in itself - aligning with Yu-kai Chou's perspective.

If the gap between games and learning still seems considerable, one can consider a concept explicitly designed to bridge it: **edutainment**. Again referring to Michael and Chen, Al Fatta's team defines edutainment as "any form of education that also aims to entertain." This particular definition implies that enjoyment is a goal alongside, possibly secondary to, learning. Edutainment is about merging two distinct activities (Al Fatta *et alii*, 2019). **Instead of segregating leisure from learning, one can engage in both simultaneously**. However, it's equally arguable that the "fun factor" in edutainment is intended to enhance learners' motivation, not merely to entertain them. In this sense, the essence of edutainment aligns closely with Gamification, both aiming to foster higher engagement in the learning process.

### 3.3.2 Gamification in education

To effectively engage and educate young individuals, gamified non-formal tasks have emerged as a captivating and impactful approach. A clear definition of what applying Gamification in education is comes from Erickson *et alii.* (2020), who define it as "the incorporation of elements of game design in a classroom setting". However, following the rationale behind other definitions outlined in the initial section of this chapter, one could argue that the provided description is somewhat incomplete, as it overlooks the purpose behind employing Gamification. We could elaborate this definition to make it more thorough as the enhancement of learners' engagement and motivation by structuring the learning process to make it similar to a gaming experience, using principles and approaches often linked with game design (though not limited to it). While this definition may not be as direct as Erickson's proposition (2020), we believe it offers a more comprehensive view, encompassing both the "what" and the "why" of the concept.

### 3.3.3 Gamification applied to education: how does it work

Since its emergence as a relatively defined phenomenon in the early 2010s, there hasn't been much time for a thorough academic examination of Gamification's intricacies. Much of what we know about its mechanisms and impacts **relies heavily on practitioners' accounts and experiences rather than structured research**. However, as Gamification has gained momentum, scholars are increasingly turning their attention to subjecting it to rigorous academic scrutiny. The "how" of Gamification often delves into psychology, particularly **behaviorism and motivational psychology**, given that Gamification aims to deliver a specific experiential impact on people's emotions and behaviors. For instance, many studies view Gamification as a means to tap into intrinsic motivation, where activities are designed to be enjoyable, satisfying, or intrinsically rewarding rather than solely for external gain. Hamari and Koivisto (2015) propose that a gamified experience amalgamates the benefits of a productive task (a "utilitarian system") with the enjoyment typically associated with a "hedonic system." They even link the effectiveness of Gamification to Mihály Csíkszentmihályi's concept of "flow" (Csíkszentmihályi, 1990), suggesting that gamified experiences are more likely to induce a state of flow or an autotelic experience. While Gamification studies often draw from computer science, certain terms like "user experience" align closely with "emotional response." Deterding *et alii*'s notion of "improving user engagement" can be interpreted in the context of creating an immersive, enjoyable experience (Deterding *et alii*, 2011*a*-*b*)

Another well-known framework in the Gamification literature is the **Octalysis framework,** initially developed by Yu-kai Chou in 2008 and subsequently expanded and refined. This framework is utilized to evaluate and craft engaging experiences across various domains, including education. It is built on the concept of deconstructing human motivation into eight fundamental drives, categorized as **"White Hat" dynamics** and **"Black Hat" dynamics**. Here are the eight drives: the first four are associated with the White Hat category, while the latter four with the Black Hat category. The descriptions attempt to elucidate these motivators in educational contexts with concrete examples.

- **Epic Meaning & Calling**: Relates to the human desire to be part of a larger purpose, encouraging students to see how their education contributes to a meaningful future, like solving real-world issues or making a positive societal impact.

- **Development & Accomplishment**: Involves the desire for growth, learning, and achieving goals, achievable through clear learning objectives, challenges, and recognizing students' achievements, thus motivating them to witness progress and attain milestones.

- **Empowerment of Creativity & Feedback**: Focuses on expressing one's creativity within the educational process, achieved through critical thinking, problem-solving, and creative projects. Providing constructive feedback empowers students to continue exploring their unique ideas and perspectives.

- **Ownership & Possession**: Pertains to the desire for ownership over the educational journey, allowing students to choose topics or projects of interest and personalize their learning experiences, fostering responsibility and engagement.

- **Social Influence & Relatedness**: Relates to the need for connection and collaboration within the learning environment, emphasizing group projects, discussions, and knowledge sharing among students to create a sense of belonging and motivation through social influence.

- **Scarcity & Impatience:** Involves the drive to acquire something exclusive or time-sensitive. In education, creating time-limited opportunities can motivate students to act and maximize these scarce resources or chances.

- **Unpredictability & Curiosity**: Focuses on the human desire for the unknown and surprises, which can be implemented in education by introducing surprises and engaging learning materials to fuel curiosity, keeping students eager to discover more.

- **Loss & Avoidance**: Relates to the drive to prevent negative outcomes. In education, it can be utilized by showcasing negative consequences to encourage students to remain committed and focused.

Yu-kai Chou's perspective on Gamification is **centered on motivation and behavior**. He states that Gamification effectively utilizes these drives, markedly amplifying motivation and shaping our encounter with gamified tasks. Although Octalysis may not strictly adhere to academic research standards, it presents a thorough framework that addresses numerous (though likely not all) mechanisms employed in Gamification. To delve into a more profound comprehension of why gamified experiences are compelling and enjoyable, delving into Chou's framework is an excellent initial step, providing additional references for extensive investigation.

### 3.3.4 Gamification as a way to improve Critical Thinking skills

Now that we have analysed the ways in which Gamification and Game-Based Learning create a more engaging environment and therefore motivate young people compared to more traditional teaching methods, let’s explore the mechanisms that lead to an enhancement in their critical thinking skills. First of all, engagement and motivation are at the heart of games that allow immersive experiences such as challenges, competitions, rewards and storytelling. This sort of engagement apart from motivating players also pushes them to think critically in order to progress within the game (Gee, 2003). Depending on the complexity of the scenarios that players are required to analyze and strategize, young students would have to put into practice their problem solving and decision making skills to complete the tasks required to finish the game (Steinkuehler, Duncan, 2008). This aspect of Gamification can be further enhanced if the game in question is played as a team because mutual collaboration encourages the sharing of ideas, negotiation, active listening to others’ points of view and so on. Moreover, the nature itself of games and therefore of gamified activities with educational purposes is that players receive immediate feedback for their actions, allowing them to improve their decision making abilities almost immediately. This mechanism fosters an environment of safe experimentation and exploration: young people learn from their mistakes through a process of trial and error that gradually challenges their critical thinking skills. In addition, Game-Based Learning often adapts to the player's skill level, progressively challenging them. This personalized approach encourages critical thinking as players strive for mastery (Steinkuehler, Duncan, 2008).

## 3.4 How to design a gamified non-formal task on a specific topic

After exploring the key elements and benefits of using Gamification and non-formal methods for youth work, particularly with a focus on their ability to increase youth motivation and critical thinking, this section will delve into gamified learning design. We will propose a practical 4-steps approach to empower youth workers to design their own gamified non-formal tasks that not only align with learning objectives but also resonate with the interests, motivations, and developmental needs of young participants.

Unlike traditional classroom settings, we have discussed how youth work often occurs in diverse community settings, each presenting its own set of challenges and opportunities. Understanding the significance of personalization and engagement, will be the key to effective gamified learning design. By embracing the principles of Gamification, we can create exciting and rewarding learning journeys that empower youths in their path to self-discovery and skill enhancement.

### A 4-step approach to gamified learning design

Whenever embarking on gamified learning design, and learning design in general, it's a common pitfall to rush into developing activities and incorporating Gamification elements without giving due attention to foundational aspects such as learning objectives and the target audience. This rush often results in poorly designed learning experiences that fail to effectively engage and educate participants. For instance, a poorly designed learning experience might include vague or overly ambitious learning objectives, which leave participants confused about what they are expected to achieve. Inadequate consideration of the target audience can lead to content that lacks relevance or that doesn't resonate with the learners' interests and needs. Additionally, hasty Gamification can result in superfluous or distracting game elements that detract from the educational content, causing confusion and diminishing the learning experience. To avoid these pitfalls, it is crucial to approach learning design thoughtfully, we propose a 4-step approach thereof.

The first step entails **understanding youth characteristics** in order to determine whether the new tools and techniques would be suitable. In the first place, in a youth work setting, it's essential to grasp the youth's inclination to engage with the content and their willingness to participate in activities. Knowing their interests and preferences can help tailor gamified tasks to be more appealing.

Imagine you're organizing a program to promote environmental awareness and sustainability to a group of young people and that you discovered in a previous conversation that many of them are very much into sport competitions. You might for instance propose an obstacle race whereby participants encounter stations with environmental trivia questions. This not only will reinforce environmental skills but also tap into their interest in sports. This is why knowing the target group, their realities and interests can make the difference in choosing the right learning path. Assessing the skills and competences of young participants to determine what they can realistically achieve is then essential to create tasks that match their abilities. If tasks are very easy or very difficult, the risk of demotivation increases, so it is important to gradually introduce challenges and match skills concretely.

The second step is about **setting clear learning goals**. Learning objectives should be specific, measurable and relevant to the personal growth and development of the participants, otherwise the risk is that gamified non-formal activities, no matter how engaging and entertaining they are, will seem pointless. A further distinction between knowledge, skills and attitude objectives is recommended in order for objectives to be clear and specific:

- **Knowledge Objectives**: These objectives focus on the acquisition of new information or understanding. For example, in the context of environmental awareness, a knowledge objective might be to understand the principles of recycling, the impact of climate change, or the importance of biodiversity.
- **Skills Objectives**: These emphasize the development of practical abilities or competences. In the case of our environmental awareness program, a skills objective could involve the acquisition of practical skills such as composting, water conservation, or tree planting.
- **Attitude Objectives**: Attitude objectives target shifts in participants' beliefs, values, and attitudes towards a particular topic. In our scenario, an attitude objective might aim to instill a sense of responsibility and motivation to protect the environment.

The objectives determine the **creation of educational content and activities**, the third step in the proposed approach. To continue with our example, if your primary goal is knowledge acquisition, gamified quizzes, scavenger hunts for information, or guided explorations can be effective; if the focus is on skill development, hands-on challenges, role-playing scenarios, or problem-solving games can be incorporated; if the aim is to influence attitudes and values,

activities promoting reflection, group discussions, and interactive storytelling can be designed to provoke thought and discussion. By ensuring alignment between your learning objectives and the gamified tasks, you create a meaningful and holistic learning experience that not only engages participants but also results in the desired knowledge, skill development, or attitude change. It is through this alignment that gamified non-formal tasks become powerful tools for youth work.

In the design of educational activities, it is recommended then to take into account:

- **Multiple performances**: Learning activities need to be designed so that young participants can repeat them in case of an unsuccessful attempt. It is very important to create conditions and opportunities to achieve the ultimate goal. This encourages a growth mindset where failures are seen as opportunities to learn and improve.
- **Feasibility**: Ensure that activities are appropriately achievable and challenging. They should be adaptable to the skills of the participants, providing a sense of accomplishment without becoming too easy or too difficult. They have to be tailored and adapted to students' potential and skill levels.
- **Increasing difficulty level**: Design tasks in a way that they become progressively more complex, requiring more effort from students and corresponding to their newly acquired knowledge and skills.

Only as a last step for designing a non-formal activity that is gamified, facilitators should think about **incorporating game elements and mechanics**. Some ideas:

- **Point System**: Introduce a point system to reward youth for their achievements and active participation. Points can be tied to personal development goals and serve as a quantifiable measure of progress.
- **Levels**: Create a system where participants advance through levels as they complete tasks and achieve personal growth milestones.
- **Awards**: Recognize and celebrate exceptional accomplishments with awards, which can take the form of certificates, recognition in the community, or personal development milestones.
- **Leaderboard**: Implement a leaderboard to encourage friendly competition among youth. Participants can compare their achievements and motivate each other to excel.
- **Badges**: Use digital badges to acknowledge specific accomplishments. These badges can be tied to personal development achievements, encouraging youth to strive for

self-improvement.

In a youth work setting, gamified non-formal tasks should align with the personal development and growth goals of the participants. By considering the unique characteristics and motivations of young individuals, Gamification can become a powerful tool for engaging youth, fostering personal development, and promoting a sense of accomplishment in a non-traditional, non-formal learning environment.

## 3.5 Examples of non-formal activities gamified to encourage learners' involvement and motivation in learning about Fake News

The aim of this section is to provide a list of activities that can encourage engagement and enhance the motivation of the youth to learn more about the topic of Fake News. Each activity will be presented in the following way: title, type of tool, aim and objective of the activity, materials and resources needed to perform the activity, approximate or ideal number of participants, step by step process, ideas for debriefing questions. Following this model, youth workers will be able to implement the activities just by following the description and can use the same model to create their own activities.

All activities are based on non-formal education methodologies and present some sort of Gamification or Game-Based Learning element. The theoretical part needed to complete these activities comes from the first and second chapters of the BEST Guide. For this reason these activities are to be interpreted as a consolidation methodology to make sure the participants have secured the knowledge on the topic.

Finally, we would like to add that even though the BEST guide is addressed to youth workers, most of these activities can be adapted and performed also in different settings such with NGO members, teachers, volunteers etc.

## Mediarisk

**Type of tool:** Role play

**Aim and objectives:** to point out the psychological and social consequences of irresponsible media reporting in major tragic events; to highlight the role of the media in the recovery of the directly affected and of the community.

**Material and resources needed:** Role cards, smartphones, Internet connection

**Number of participants:** Minimum 6

**Step by Step process:**

1. This activity should be implemented after a major tragic event with big national media coverage. Prior to the activity, participants should be assigned the task of investigating how media and social media portrayed the event.
2. In the introductory part of the activity, the facilitator asks questions about what they read/saw on their digital devices, which media/social media they used the most. Summarize their answers and point out how all sorts of media covered the event, listing both traditional and digital media.
3. Divide the participants into groups of 3 (or more). Each person will be assigned a role: one should always be a journalist, the other two will be assigned the role of the most affected target groups in the event. You can write roles on role cards to be drawn randomly from the participants. Let's have a look at an example: if the tragic event chosen were a shooting taking place in a school, then the affected target groups could be parents and students.
4. At the small group level, participants discuss and critically analyze whether the media reported the event responsibly or irresponsibly based on the role they were assigned. They argue their positions. Then they state what should be done in such situations according to the opinion of the target group to which they belong in this activity.
5. Each group presents its work. Monitor and encourage the discussion, promote a positive and safe exchange of ideas. At the end, facilitate a discussion about psychological guidelines for media reporting after crisis events.

**Debriefing:**

- How was it like to be in your target group's shoes?
- Did you manage to empathize with your target group?
- How do you think the media coverage was perceived by your own target group? Does perception change according to the type of media?
- What representation was the most irresponsible for you and why? Did your perception of certain media outlets change?

## Reality in 3 angles

**Type of tool:** Visual activity

**Aim and objectives:** Foster critical thinking; stimulate reflection on our own bias and perceptions; teach participants to be open to new perspectives and to look at things from different points of view; challenge stereotypes.

**Material and resources needed:** pictures from different cultural backgrounds (one picture per group)

**Number of participants:** Minimum 6-8, divided into at least 2 groups

**Step by step process:**

1. As facilitators, select pictures depicting cultures other than those of the participants (the more ambiguous and open to interpretation the pictures, the more effective the activity is going to be).
2. Divide the participants into small groups (3 or 4 participants per group) and give each group a picture. Ask each member to write down individually everything that comes to their mind looking at the photo, like a personal brainstorming. Give them 7/8 minutes to complete this step.
3. Ask each member to share their thoughts and list of words with his group. Each group will have to sort out these thoughts/words into 3 categories: description (what I see), interpretation (what I think it means) and evaluation (how I judge what I see). Participants will have to agree on the location of each item. Give them 20 minutes to complete this step. If necessary, you can support the group of participants by giving them clues. For example, you can ask them the following questions: *is it (the word/item) what you **see**, what you **think** you see or how you **feel** about what you see?*
4. Ask each group to show the picture to the other group and present their list. Encourage the other group to make comments on the location of each item.
5. Reveal the original caption of the picture.
6. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

What was the most difficult part of this exercise?

Which was the category with the biggest number of words? And why?

How can these aspects be connected to our life and experiences?

How are these concepts related to stereotypes and prejudices?

## Chinese Whisper

**Type of tool:** Energizer

**Aim and objectives:** raise awareness on the existence of a big number of fake news but also on how fake news are easily generated and spread; encourage a reflection on the consequence of reporting information without checking the source or verify the truthfulness of the information.

**Material and resources needed:** a few headlines from the newspapers, real or adapted but reporting real facts (length: 4 to 5 lines)

**Number of participants:** Minimum 7 (maximum 20)

**Step by step process:**

1. The facilitator prepares a few headlines, real or adapted, reporting real facts (length: 4 to 5 lines) and prints or writes them on a sheet of paper.
2. Ask for 1 volunteer.
3. The volunteer receives a sheet of paper with a short headline taken from a newspaper and reads it. The volunteer has to try to memorize it silently (allow 1 minute).
4. Ask the participants to form a straight line with the volunteer-reader being the first person of the line.
5. The volunteer, without reading, tells the listener (the next person in the line) the headline. The listener will try to repeat the headline to the next person and so on.
6. At the end, the facilitator must ask the last person of the line to say out loud the headline received from the report told by the other participants.
7. Compare the “last” headline with the original one.
8. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

Was it difficult to perform this activity? What was the most difficult part?

Do we usually spend more than one minute reading or researching a particular story online?

What do you learn from this activity?

How can you apply what you learned in this activity to your work/job?

## Where do you stand?

**Type of tool:** Energizer, Debate

**Aim and objectives:** raise awareness on the existence of a big amount of fake news; encourage reflection about the way we act when presented with "news" of different kinds and the influence of others on our choices; promote development of critical thinking.

**Material and resources needed:** a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by the facilitator).

**Number of participants:** Minimum 5

**Step by step process:**

1. Prepare a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by you)
2. Instruct the participants to place themselves on one side of the room or one another based on their opinion on the headline that they will hear. For example, right side of the room for "real" alleged headlines, left side of the room for alleged "fake" headlines.
3. Read one headline from your lists at time, following a random order (mix real and fake headlines) and ask the participants to move based on their thoughts about the headline.
4. Present the list and reveal which headlines are true, and which are false.
5. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

What do you think about this activity?

Did the way that other participants acted influenced your choices?

Do you recognize which bias made you think certain news were real or fake?

How can you apply what you learned in this activity to your work/job?

## 2 truths, 1 lie

**Type of tool:** Ice-breaking activity

**Aim and objectives:** promote critical thinking; develop judgment skills; encourage a reflection on how to spot fake news (based on the elements contained in the presented examples) and on the importance of checking the reliability of sources.

**Material and resources needed:** a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by the facilitator), sticky notes or voting paddles (red and green).

**Number of participants:** minimum 5

**Step by step process:**

1. Prepare a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by you) and voting paddles (red and green) for the participants or create them (alternatively, you can use green and red sticky notes).
2. Present the headlines in groups of 3 (2 real and 1 fake) and ask the participants to vote.
3. Participants use the red paddle for the alleged fake headline and the green paddle for the alleged real ones.
4. Optional: at the end of each "turn" show the sources for the headlines.
5. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

Was it difficult to perform this activity?

How many fake news did you guess?

Which criteria did you use to make your choices?

## 2 truths, 1 lie (digital version)

**Type of tool:** Ice-breaking activity

**Aim and objectives:** promote critical thinking; develop judgment skills; encourage a reflection on how to spot fake news (based on the elements contained in the presented examples) and on the importance of checking the reliability of sources.

**Material and resources needed:** a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by the facilitator), a multimedia presentation.

**Number of participants:** minimum 5

**Step by step process:**

1. Prepare a list of real headlines from the newspapers and a list of "fake" headlines (found on the internet or adapted/written by you) and a multimedia presentation (for example using mentimeter) in each slide you presents the headlines in groups of 3 (2 real and 1 fake) and ask the participants to vote.
2. Individually, participants choose the alleged fake headline.
3. At the end of each slide show the right answers.
4. Optional: at the end of each "turn" show the sources for the headlines.
5. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

Was it difficult to perform this activity?

How many fake news did you guess?

Which criteria did you use to make your choices?

## Fakebook

**Type of tool:** Visual activity

**Aim and objectives:** encourage a reflection on the spreading of fake news; promote critical thinking; raise awareness on the impact of what we write and share on social media and on the negative consequences of irresponsible behaviours online.

**Material and resources needed:** sheets of paper, sticky notes, printed fake news, rolecards.

**Number of participants:** minimum 4

**Step by step process:**

1. Prepare a series of fake news using a website such as breakyourownnews.com. Prepare a series of "social media user" role cards to give to the participants. The cards should report roles such as "average social media user", "politician", "entrepreneur", "troll", "influencer", "truth talker" (the one that refutes fake news) and a series of instructions/script to follow that mime the activity of certain users on social media, particularly in reference to the sharing/comment activity on fake news.
2. Print the fake news and attach them to the walls.
3. Give each participant a role card. Each player has a relevant reason to share or comment on the fake news, except for the truth talker. Tell them to not reveal their role to the others. Instruct them to write on sticky notes comments about the news attached to the wall following their role card and to attach them under the news.
4. Allow different rounds for this activity.
5. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

How did you feel in playing the role assigned to you?

What roles did you recognize in the comments?

Have you ever witnessed this type of situation? How did you react?

Do you recognize yourself in some other role here described?

## Flashcards about fake news (Quizlet)

**Type of tool:** Digital competition game

**Aim and objectives:** provide the participants with the essential vocabulary terms and definitions related to fake news; improve their knowledge on the topic

**Material and resources needed:** quizlet flashcards, smartphone, computer, projector

**Number of participants:** non relevant

**Step by step process:**

1. Create a set of study flashcards on the terminology related to fake news using ICT tools such as quizlet. Match the term with the definition. You can add pictures or voice notes for participants with hearing or visual impairment.
2. Assign the study set to the participants to revise, individually or in group.
3. Alternatively, present the flashcards in a different modality (for example match or quiz) and invite the participants to join the game.
4. Do a debriefing to encourage them to deepen their knowledge on the given topic.

**Questions for debriefing:**

Was this activity difficult for you?

How many definitions/terms did you guess?

Were there new words?

Is there something that you would like to discuss with your group/to learn/topics that you would like to discover?

## Fake news contest

**Type of tool:** Creative storytelling

**Aim and objectives:** secure knowledge on different techniques of information manipulation; promote a better understanding of the phenomenon of fake news in order to unmask it effectively; stimulate critical thinking.

**Material and resources needed:** cards template to be filled

**Number of participants:** minimum 5

**Step by step process:**

1. Create a template of playing cards using tools such as Canva, then print them.
2. Present to your group the different techniques of information manipulation (or revise them together).
3. Give each participant one blank card and instruct them to fill their card with the objective description of a fact.
4. Collect the cards, shuffle them and then invite the participants to pick one.
5. Instruct the participants to create a fake headline based on what they read and on their knowledge on information manipulation techniques and to share their idea with the rest of the group. They have 3 minutes to prepare.
6. Each participant votes the fake news created by other participants (rating 1 to 5)
7. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

What do you think about this activity?

Was it easy or difficult to create a fake headline?

Were your headlines credible? Why?

According to you, how can we unmask fake news effectively?

## Matching crosswords

**Type of tool:** Collaborative word puzzle game

**Aim and objectives:** guess and recognize words and concepts that can be connected to fake news; to improve their knowledge on this subject; promote a better understanding of the phenomenon of fake news in order to unmask it effectively; stimulate critical thinking.

**Material and resources needed:** printed crosswords to be filled or smartphone and digital devices to fill them online

**Number of participants:** minimum 6

**Step by step process:**

1. Create a matching crossword using Word or an online tool such as learningapps;
2. Print the crossword or send the link to the participants;
3. Divide the participants in minimum 2 groups and tell them to resolve the game;
4. Set a time and assign points to the group that finishes the game first;
5. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

What do you think about this activity?

It was difficult to complete the crosswords?

In your opinion, how are the words in this game connected to the subject of fake news?

## Fake-scape room

**Type of tool:** Escape room

**Aim and objectives:** secure knowledge on different techniques of information manipulation; to work on how to unmask fake news effectively; to stimulate critical thinking.

**Material and resources needed:** mobile devices (phone or tablets), prepared escape room activity

**Number of participants:** no minimum number of participants required

**Step by step process:**

1. Prepare a digital escape room using google form or other websites and tools. Start from a fake headline and give the participants a "hint" after each question or activity, if they answer correctly. The questions and activities should be related to the topics. The hints should help the participants to solve the case and to find out that the headline is a fake.
2. Assign the escape room to the participants.
3. Encourage reflection on the activity with a debriefing.

**Questions for debriefing:**

What do you think about this activity?

Was it easy or difficult to create a fake headline?

Were your headlines credible? Why?

According to you, how can we unmask fake news effectively?

## Propaganda race

**Type of tool:** Competition game, Energizer

**Aim and objectives:** secure knowledge on different techniques of propaganda techniques

**Material and resources needed:** list of headlines/advertisements/sentences that use propaganda techniques, buzzer or buzzer app on the phone, flipchart and markers

**Number of participants:** minimum 2 participants

**Step by step process:**

1. The facilitator prepares a list of sentences, headlines or advertisements that use propaganda techniques. The techniques should be selected from the First Chapter of the Guide (for ex. bandwagoning, using false statistics, slogans, plain folks etc).
2. Participants form a horizontal line and have to stand a few meters away from a desk/table. On the table the facilitator places the buzzer or the buzzer up on the smartphone (tip: it's better to place some tape on the phone so it doesn't move).
3. The facilitator reads a sentence and the first participant that knows the answer has to run to press the buzzer and answer. If the answer is correct the participant gets 1 point. In the end the person with more points wins.
4. Be aware that some sentences or headlines might contain more than one propaganda technique, therefore the participant has to guess at least one of them to get 1 point.

**Questions for debriefing:**

What do you think about this activity?

Was it easy or difficult to remember the techniques?

Did you recognize more than one technique in certain sentences?

## SexEd Truthguard

**Type of tool:** Various (quest, ice-breaking, role-playing, creative writing)

**Aim and objectives:** Equip young people with critical thinking skills to identify and counter disinformation and fake news in the realm of sexual education; empower young people to critically assess information, distinguish fact from fiction, and actively contribute to a more informed and responsible discussion on sexual education.

**Material and resources needed:** scenarios or statements related to sexual education, internet connection, electronic devices, role-playing scenarios, pen and paper.

**Number of participants:** minimum 6 participants (so that you can have at least 2 groups of 3 people)

**Step by step process:**

1. **Icebreaker (15 minutes).** Introduction and icebreaking activity to create a comfortable atmosphere.
2. **Setting the Stage (20 minutes).** Briefly discuss the prevalence of disinformation and fake news in sexual education. Share examples of common misconceptions and their potential consequences.
3. **Interactive Workshop - "Spot the Fake!" (40 minutes).** Divide participants into small groups. Provide each group with a set of scenarios or statements related to sexual education, some true and some false. Groups work together to identify which statements are accurate and which are fake. Encourage discussions on how they reached their conclusions.
4. **Fact-Checking Tools (20 minutes).** Introduce participants to fact-checking tools and online resources. Guide them on how to verify information independently.
5. **Case Studies Discussion (30 minutes).** Present real-life case studies where misinformation affected sexual education discourse. Discuss the impact and ways to counter such misinformation.
6. **Role-Playing - "Breaking the Chain" (30 minutes).** Participants engage in role-playing scenarios where they counteract misinformation. Emphasize effective communication and providing accurate information in response to false claims.
7. **Reflection and Group Discussion (20 minutes).** Reflect on the challenges faced during the workshop. Facilitate a group discussion on the importance of critical thinking

in addressing misinformation.

8. **Creative Expression (15 minutes).** Allow participants to express their thoughts through creative means like art, poetry, or short written pieces.
9. **Action Planning (15 minutes).** Discuss practical steps participants can take to combat misinformation in their communities. Encourage them to share reliable sources and engage in constructive conversations.
10. **Closing and Evaluation (10 minutes).** Summarize key takeaways. Collect feedback on the effectiveness of the workshop.

**Questions for debriefing:**

The debriefing session takes place after each small activity.

## Conclusions

The aim of this chapter was to offer a comprehensive perspective on what is the use of non-formal education methodologies and Gamification and Game-Based Learning to reach the goal of the BEST project. As demonstrated in this chapter, these learning techniques have the potential to enhance students' engagement, motivation and critical thinking skills when it comes to the topic of fake news. The main characteristics of Non-Formal education, where the content is individualized, flexible and practical, allow the learners to be at the centre of the lesson and the monitoring and evaluation parts are carried out in a democratic way through a debriefing session. In this way young people can be active participants in their learning process and draw their own conclusions from experience. The level of motivation and engagement grows even further when the facilitator adds Gamification and Game-Based learning elements to their lessons: young people are required to employ a variety of skills that include but are not limited to creativity, problem solving, cooperation, curiosity and decision making in order to complete the task. The use of this set of abilities is what creates a dynamic learning environment that motivates young people to perform activities successfully. The above mentioned skills are therefore necessary for completing a gamified learning activity but they are also furtherly explored and improved through the implementation of such activity. For this reason this chapter also provides a list of non-formal activities based for the most part on Gamification and Game-Based Learning methodologies that teachers can implement. Lastly, we would like to point out that in this chapter we mainly focused on the elements of Gamification and Game-Based Learning that allow learners to train and enhance their critical thinking skills since this is one of the essential components of building a sense of active citizenship in young people. Through the implementation of these non-formal activities, youth workers will be able to teach young learners the importance of being active citizens and taking responsibility for their actions when it comes to reading, interpreting and spreading information both in real life and online. In this way, not only the younger generation will be able to recognize fake news from a legitimate source, but they will also contribute in creating a safer network of information.

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