LESSON 3.1 - PROTECTION OF PHYSICAL HEALTH WHILE USING TECHNOLOGY

INTRODUCTION

This module contains a lot of information on health and safety. However, now we are looking at the topic from a new perspective that has not been addressed yet. We deal with important issues such as the adverse health effects of continuous and long-term use of technologies or dangers to health.

In this section, teachers' attention is drawn to the health impacts of the use of technology. We deal with ergonomic requirements and the dangers that could damage the physical health of adults, young people, and children alike.

Unfortunately, we do not yet know of a curriculum/syllabus or any teaching materials that, in accordance with its importance to schoolchildren, would address those specific health issues that endanger children because of the continuous and regular use of technology. However, being aware of the latest research results, this topic is absolutely important and must be dealt with, problems must be solved. For this purpose, we first share the knowledge with teachers. It is our undisguised future goal to make the introduction and discussion of this topic part of the IT curriculum.

Learning outcomes

Students have to learn about:

- The dangers of long-term computer and other electronic device use, as well as health hazards/risks.
- Ergonomic aspects of working with a display screen (DSE).
- Further risks to the health of children and young people.
- Other health hazards/risks related to digital “gadgets”.

With the help of the acquired knowledge, students will be able to:

- Recognize health hazards/risks and share their knowledge on them with parents, colleagues and students.
- Suggest a debate/discussion of the topic.
- Take a role in prevention, changing attitude and creating the order of use of school equipment.

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DAMAGES TO PHYSICAL HEALTH IN CASE OF LONG-TERM COMPUTER USE

Computer supply has changed, widened dramatically in recent years. However, the basic IT environment (in schools and at work) is virtually still unchanged: desk, chair, monitor, keyboard, mouse and the people working with the help of these. In this section we discuss the health hazards/risks and adverse health effects of excessive computer use, and how to prevent them.

In all European countries, the widespread use of *digital literacy*[1] has been a clear goal in the last decade. At the same time, we also need to see how the changed environment - in which more and more people spend more and more time - has an impact on the physiological characteristics of those sitting in front of the computer.

The threat to young people and children is discussed in the next section. This section is be about those adults who use IT equipment as a basic tool for their everyday work.

TYPES OF DISEASES

Computers, which for many of us are essential, can be characterized with such contradictory terms as blessing and curse. We know the benefits, their excellent application possibilities, but there is much less told about their harms. Yet we all experience during their long-term use that we get tired, pain occurs in our back, spine or eyes and many of us complain about hand pain.

Computer Related Injuries (CRI)

The IT industry has brought a specific consequence: Computer Related Injuries (CRI) have occurred. In international health practice, health problems commonly associated with computer use are referred to as CRI.

- Eye-related problems
- Carpal tunnel[2] syndrome (which can occur in one or both of your hands), Tendonitis

[1] The modern collective concept: digital literacy, which is the concept of information and communication technologies (ICT), seeks to integrate knowledge and skill elements, basic knowledge and special use. The concept itself is based on the understanding of literacy as a skill. Literacy requires continuous learning, enabling us to reach our life goals, expand our knowledge and abilities, and effectively participate in the life of our narrower and wider community. (UNESCO Literacy Portal, 2009)

[2] „Carpal tunnel syndromes are those diseases in which a nerve is compressed by some of the muscles, tendons and bony channels surrounding it."

- Health problems related to posture

ERGONOMIC REQUIREMENTS

For working in front of the screen, workplace elements (e.g, chair, desk, screen, keyboard, document holder, footrest) must be in alignment with ergonomic requirements. Working in front of the screen might seem easy, but in fact, it means a high degree of constant attention and an increased load on eyes.

Office ergonomics[3]

Poor posture and bad workplace design and conditions and neglecting ergonomic requirements in screen-related workplaces[4] make this type of working even more tiring.

For this reason, people working with a computer often complain about the following problems: fatigue, stress, eye problems, headache, back and hand pain.

[3] The term **ergonomics** comes from the Greek ἔργον, meaning "work", and νόμος, meaning "natural law". **Ergonomics** is a scientific field which examines the relationship of human-machine-work environment. Its aim is to tailor the closer and wider work environment, machines and equipment to human needs as much as possible.

[4] Screen-related workplaces are those in which employees spend at least 4 hours of their daily working time in front of a device that has a screen.

Adverse effects of long-term computer use
Source: https://www.usanotebook.hu/blog/milyen-hatassal-van-a-szamitogep-a-szemunkre-es-hogyan-tudjuk-megkimelni/495

These complaints may result from stress, overload on the eyes, poor posture, use of equipment that does not meet ergonomic requirements or other inappropriate working conditions.

How should we sit, what posture should we adopt?

A relaxed, laid-back posture is the best in order to minimize the compression of interverbetral discs. The bigger the backrest angle, the less we use our muscles. Compared to the horizontal position, the ideal position is with a 120-degree back and a 14-degree seat inclination angle.

Importance of ergonomic posture:
https://www.youtube.com/watch?v=aLY03KrcpKI&t=21

More information

Checklists and Standards for Display Screen Equipment (DSE) workstations are available in English at: http://www.hse.gov.uk/pubns/ck1.htm

Practical tips

FIVE EASY EXERCISES IN FRONT OF THE COMPUTER SCREEN

Eye training with focusing

Find the furthest point behind your monitor and focus your eyes on it. Then focus on the frame of the screen. Repeat it. If you can't look far enough from the

screen, choose a different direction and shift the focus between the distant shape and the pen held at the distance of the monitor.

Head turns

Turn your head to the left and hold it there for two seconds. Then turn it to the right and hold it there for two seconds.

Finger stretching

Move apart and stretch your fingers until you feel them tense. Keep this position for 10 seconds. Relax and bend your fingers at the joints and hold this position for 10 seconds. Repeat the exercise.

Shoulder stretches

Clasp your fingers behind your back. Then, carefully pull your elbows closer until your arms are straight. Hold this position for 5-15 seconds, then repeat the exercise twice.

Vertical shoulder exercise

Put your hands on the armrest while staying in a sitting position. Push your body upwards until your arms are stretched out. Try to stretch your head even further by lowering your shoulders. Then slowly descend back into the chair.

HEALTH DANGERS AND HAZARDS/RISKS FOR YOUNG PEOPLE AND CHILDREN

Using your computer and other smart devices continuously and for several hours a day is rather harmful to your body than useful. Not only mental, but physical problems or illnesses can occur (although N.B. negative mental effects are more common). It is indisputeable that in today's fast-developing world, these tools play an important role in people's lives, but we must always keep in mind where to draw the line. Most of the computer “illnesses” have spread to young people who have fallen into the trap of excessive computer use.
Recent research has also highlighted the health problems of young people, of which only those that pose a threat to physical health can be found in the next section.

Scoliosis, Inactive lifestyle

If somebody sits in front of the computer for too long, soon there will be pain in his/her back and neck. If you do not move around enough/do not do any sport, then spinal problems may develop shortly. However, the most important consequence of lack of exercise is weight gain and all complications resulting from obesity. Childhood weight gain increases the chance of adult hypertension,

diabetes, and moreover, adversely affects the condition of joints and bones, causing many locomotor disorders later.

Negative/Dangerous effects of the Internet

If you do not pay attention to what pages younger children are browsing, they can easily become victims of violent images. Many young people are unable to assess dangers and get into trouble easily. Many people become victims of online scams/fraud. These issues are discussed in detail in the same module, in section 3.2.

Computers must never replace picture books, tales and parents
Source: https://www.gyerek-portal.hu/szamitogep-es-hatasai-a-gyerekekre.html

More information

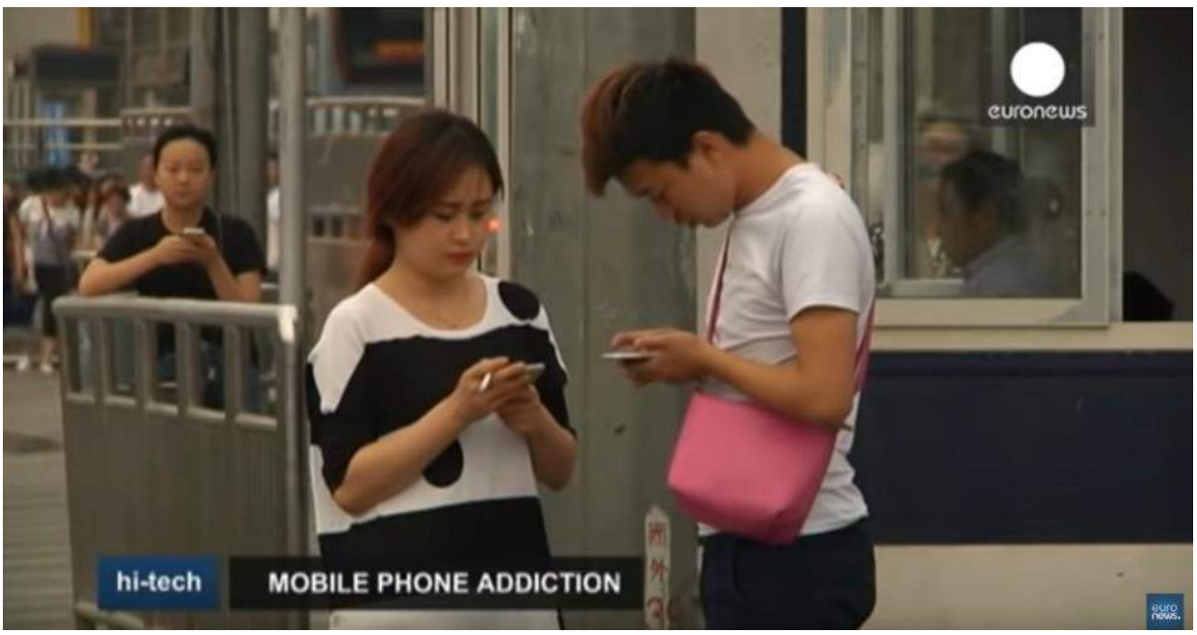
„In an interview with GEO Kompakt, Gerald Hüther, a German brain researcher and neuropsychologist said that there had been cases in Southeast Asia when gamer children died while playing on the computer because of starving and/or severe dehydration.

The guys didn't feel their own body at all, they were completely identified with the game, they didn't drink and they didn't eat, and it led to their death.

The situation of girls is different. They are more familiar with virtual flirting and chatting. This is a substitute for them, because if they fail to get to know other people in the real world, they flee into the virtual space. If they do not succeed here either, they may develop depression over the time. Facebook depression is an

already existing, distinctive phenomenon. Of course, these are the most serious consequences.

Excessive computer use. i.e. staring at the monitor, can lead to the narrowing of the retina, which can endanger anyone, regardless of age, and can even anticipate circulatory problems – said the employees of the Centre for Vision Research, University of Sydney.[5]*”*



Mobile phone addiction and its health hazards/risks
https://youtu.be/KWdaoVnnkCI

FURTHER HEALTH HAZARDS/RISKS YOU SHOULD DEFINITELY KNOW ABOUT

„At first glance, electronic gadgets (smartphones, tablets, computers) seem to be clean because they do not have exhaust fumes like diesel vehicles or coal-based thermal power plants (if we ignore some problematic mobile phone models that might catch fire). However, if we have a closer look at these devices, it turns out that their production can be linked to leukemic diseases, lung cancer, brain tumors, miscarriages and other problems.”[6]

The lifecycle of our electronic and IT devices (smartphones, tablets, laptops) does not start when we buy or receive them, and does not end when we get bored with

[5] https://www.webbeteg.hu/cikkek/neurologia/15719/professzor_katona_ferenc_digitalis_bennszulottek

[6] https://greenfo.hu/hir/az-elektronikai-kutyuk-arnyai/

or replace them. The lifecycle of such a product begins with the extraction of the raw materials used for its production and packaging.

For companies operating in the ICT sector, this business can be highly profitable because the real price of these products is not stated on the price tag: environmental and social costs are charged to society.

Watch the classic short film by Annie Leonard on the story of electronics:
https://www.youtube.com/watch?v=dcBNRCldLvE

SUMMARY

In this section, we have summarized the health hazards/risks and dangers that affect adults working with computers, young people who spend a lot of time with digital devices (communication, gaming, learning, and other online social community activities) and most recently, an increasing number of children. We have dealt with the most common types of illnesses/disorders/health problems, ergonomics, and moreover, with how the EU and individual member states regulate the responsibilities of computer-related workplaces in terms of creating sets of equipment and work environments that meet ergonomic standards and requirements.

It is a positive point that the child protection strategies of the EU and its member states are becoming more and more specific about the digital threat to children and an attitude change can be tracked that promotes the protection of young people through raising awareness and encouraging dialogues.

We consider it important for teachers to learn from each other and share their previous experience and knowledge on these topics in order to create the best possible teaching materials.

We are confident that collaboratively developed materials and international dialogue among teachers will help to raise awareness of the topic among more teachers, parents and children.

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2. TEENAGERS' USE OF DIGITAL TECHNOLOGY – RESULTS OF A SURVEY
   Anita, Lanszki, Budapest, 2018
   https://www.researchgate.net/publication/324603622

Videos

1. IMPORTANCE OF ERGONOMIC POSTURE
   https://www.youtube.com/watch?v=aLY03KrcpKI&t=21s

2. MOBILE PHONE ADDICTION AND ITS HEALTH HAZARDS/RISKS
   https://youtu.be/KWdaoVnnkCI

3. THE SHORT FILM OF ANNIE LEONARD: THE STORY OF ELECTRONICS (ANNOTATED SCRIPT)
   https://www.youtube.com/watch?v=dcBNRCldLvE

LESSON 3.2 - PROTECTING PSYCHOLOGICAL WELL-BEING IN DIGITAL ENVIRONMENT

INTRODUCTION - RISKS AND THREATS TO PSYCHOLOGICAL WELL-BEING WHILE USING DIGITAL TECHNOLOGIES

Psychological well-being describes an individual's emotional health and overall functioning. People with high psychological well-being report feeling capable, happy, well-supported, and satisfied with life. As digital technology becomes increasingly pervasive so to do concerns about the affect this digital environment is having on people's psychological well-being.

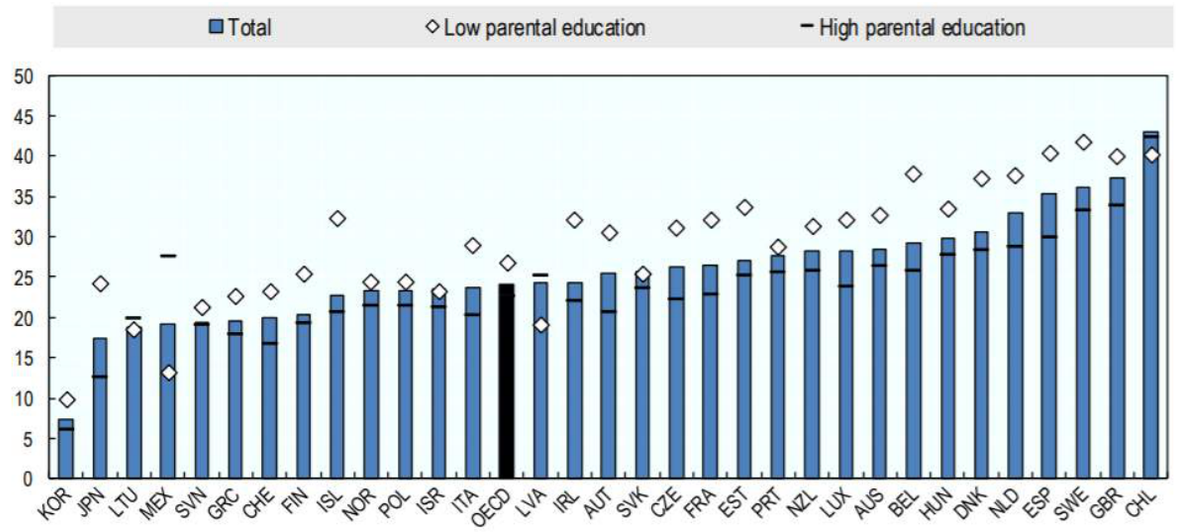
Source: What is wellbeing? (2018) UK Multi Comfort.
https://www.youtube.com/watch?v=mxz8KyV3Ydc

Digital technologies can involve risks for people's well-being, ranging from cyber-bullying to breaches of online security and privacy. People need a diverse set of skills adapted to a digital world to mitigate these risks. Beyond labour market skills, emotional and social skills are especially important to fully benefit from digital technologies and safely navigate the online world.

The extreme use of technology has been associated with several mental health risks such as depression, anxiety, addictions, attention deficit and bipolar disorders

especially among children. However, there are substantial gaps in research on problematic media use, especially as it pertains to children.

https://www.oecd.org/going-digital/well-being-in-the-digital-age.pdf



TECHNOLOGY ADDICTION (INTERNET, SMART PHONE) AS INABILITY TO CONTROL ITS USAGE.

Technology addiction, Internet addiction, Internet use disorder (IUD) and Internet addiction disorder (IAD) are all terms used to describe a variety of obsessive compulsive behaviours around the use of various kinds of technology, particularly the Internet, smartphones, and social networking sites such as Facebook, Twitter and Instagram.

Studies have shown that using technology can bring about the same chemical reaction in the brain as addictions to drugs, alcohol, smoking, and sex.

Opinions are divided as to whether this is a new psychological disorder or the expression of another existing disorder. Consequently, there is disagreement about how to measured and prevalent it. Even so, interest in how to combat excessive technology use is rising.

So far, gambling is the only online activity listed as a possible addiction. The World Health Organization added “gaming disorder” to the 2018 version of the International Classification of Diseases (ICD-11). Experts say this new classification will help to legitimize the diagnosis which is an important step towards ensuring people get the help they need. However, the American Psychiatry Association’s manual, the DSM-5, has not listed it.

What is DIGITAL ADDICT? What does DIGITAL ADDICT mean? DIGITAL ADDICT meaning & explanation

The Audiopedia. (2017) https://www.youtube.com/watch?v=EqYmsMZF1Mw

Possible alternative to the video above
https://www.youtube.com/watch?v=ZTlMZiJoT8g

EMOTIONAL, PSYCHOLOGICAL, SOCIAL, ENVIRONMENTAL AND BIOLOGICAL FACTORS OF TECHNOLOGY ADDICTIONS

Often technology addicts suffer from at least one other addiction such as drugs, alcohol, smoking or sex. Men are more likely to become addicted to online gambling, gaming, and cyberporn, while women are more susceptible to compulsive behaviour with online shopping, social media and sexting.

An addiction to technology may result from a combination of biological, genetic and environmental factors:

- **Mental health history**: A disorder such as anxiety, depression, attention deficit hyperactivity disorder (ADHD), obsessive-compulsive disorder (OCD) or bipolar disorder may increase the odds of developing an addiction to technology.
- **Personality:** low self-esteem, loneliness, restlessness and withdrawal can be predictors of overusing the Internet with others to increase self-confidence.
- **Environment:** stress and lack of positive environmental contingencies (e.g., job, family relationships, and responsibilities) are thought to increase the risk of developing an Internet addiction

https://youtu.be/HffWFd_6bJ0

IDENTIFYING SYMPTOMS OF ADDICTIVE BEHAVIORS

The term addiction does not just refer to dependence on substances such as alcohol or drugs which is know as a substance addiction. Some addictions also involve an inability to stop activities, such as gambling, eating, or working, in these circumstances, a person has a behavioral addiction.

When a person cannot control how they use a substance or partake in an activity, and they become dependent on it to cope with daily life they are experiencing addiction.

Warning signs of technology addiction include:

- A sense of euphoria while plugged in
- Neglecting friends and family
- Skimping on sleep
- Dishonesty about usage
- Feeling anxious, ashamed, guilty or depressed as a result of technology use
- Withdrawing from other activities that were once pleasurable

Physical symptoms of technology addiction may include:

- Weight gain or weight loss
- Carpal tunnel syndrome
- Headaches
- Neck or backaches
- Dry, red eyes

THE PHENOMENON OF CYBERBULLYING

The Global Advisory Study. Ipsos Public Affairs defines cyberbullying as:

“when a child or group of children (under the age of 18) intentionally intimidate, offend, threaten, or embarrass another child or group of children, specifically through the use of information technology, such as a website or chatroom on the Internet, a cellular telephone, or another mobile device”.

Cyberbullying is a different type of bullying that needs special attention from parents and schools, in addition to existing efforts to address bullying in general. Cyberbullying has a unique set of characteristics that are evolving with changes in technology:

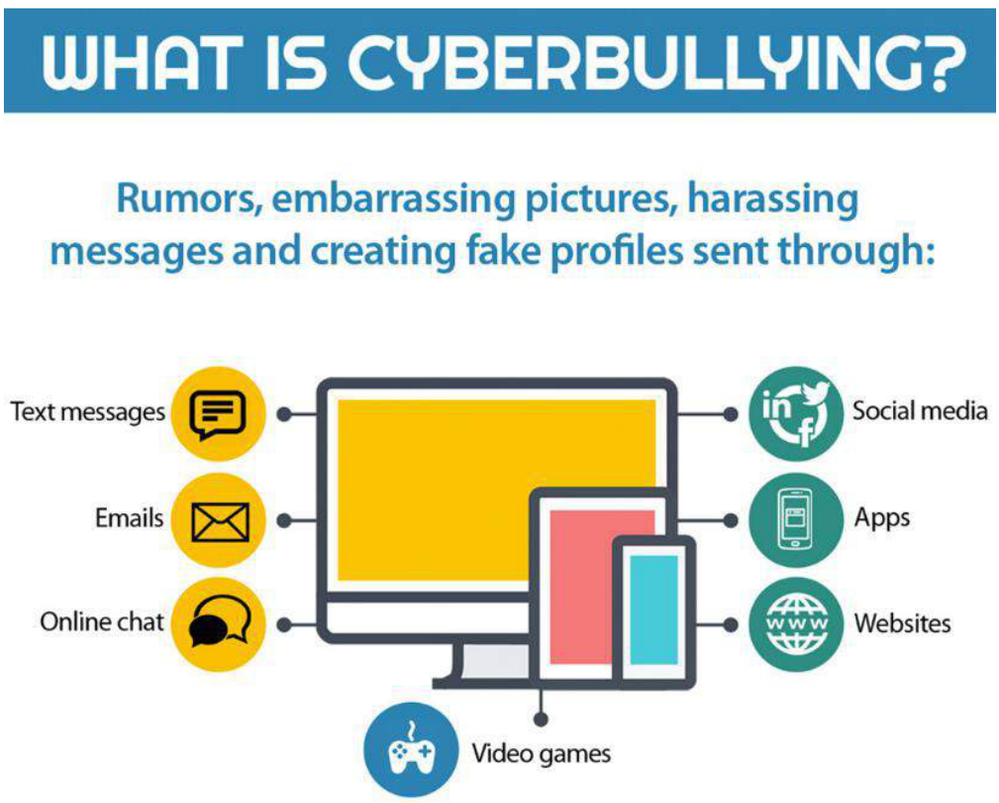
- 24/7 and can invade the victim’s home/personal space
- The audience can be very large and reached rapidly

- Cyberbullies may attempt to remain anonymous
- Cyberbullying can take place both between peers and across generations
- Cyberbullying can sometimes be unintentional

While the likelihood of being bullied does not seem to be age-related, studies from many countries like Greece, France, and Hungary all mark 13-15 as the most vulnerable period.

Social media cyberbullying is most prevalent in Instagram (42%), followed by Facebook (37%) and Snapchat (31%). (Source: DitchTheLabel)

SYMPTOMS OF CYBERBULLYING, FACTS AND RELATED TERMS



Related terms

- **Exclusion:** Intentionally excluding someone from an online group, like a "BFF list" or a game.
- **Harassment:** Repeatedly sending offensive, rude and insulting messages.
- **Outing and trickery:** Sharing someone's secrets or embarrassing information online. Tricking someone into revealing secrets or embarrassing information, which is then shared online.
- **Cyberstalking:** Repeatedly sending message that include threats of harm or are highly intimidating; engaging in other online activities that make a person afraid for his or her safety.
- **Impersonation:** "Frapping" Breaking into someone's account, posing as that person and sending messages to make the person look bad, get them in trouble, put them in danger or damage their reputation or friendships and posts that Come Back to Haunt a Child Later in Life.
- **Fake Profiles:**
- **Dissing:** Sending or posting cruel gossip or rumors about a person to damage his or her reputation or friendships.
- **Trolling:** Intentionally posting provocative messages about sensitive subjects to create conflict, upset people, and bait them into "flaming" or fighting.

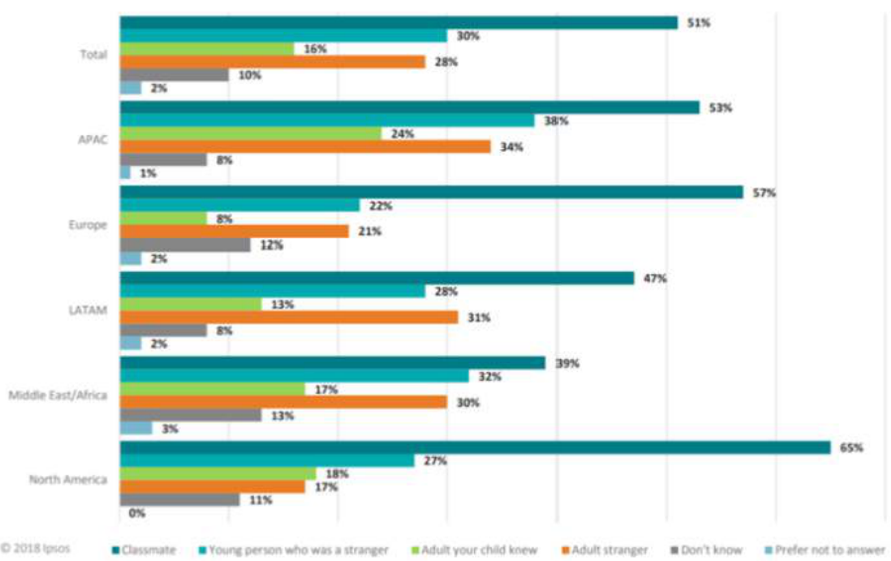
- **Catfishing:** Stealing online identities and personal information to recreate fake personas for online relationships. Sexual predators use their fake identity to talk to teens, allowing them to get close to them so that the victim will trust them.
- **Cyberpredators:** Sexual and other predators can stalk the Internet, taking advantage of children's innocence, abusing their trust and, perhaps, ultimately luring them into very dangerous personal encounters.

Cyber-bullying Facts - Top 10 Forms of Cyber Bullying

This video show common forms of cyberbullying and the symptoms to watch out for in young people.

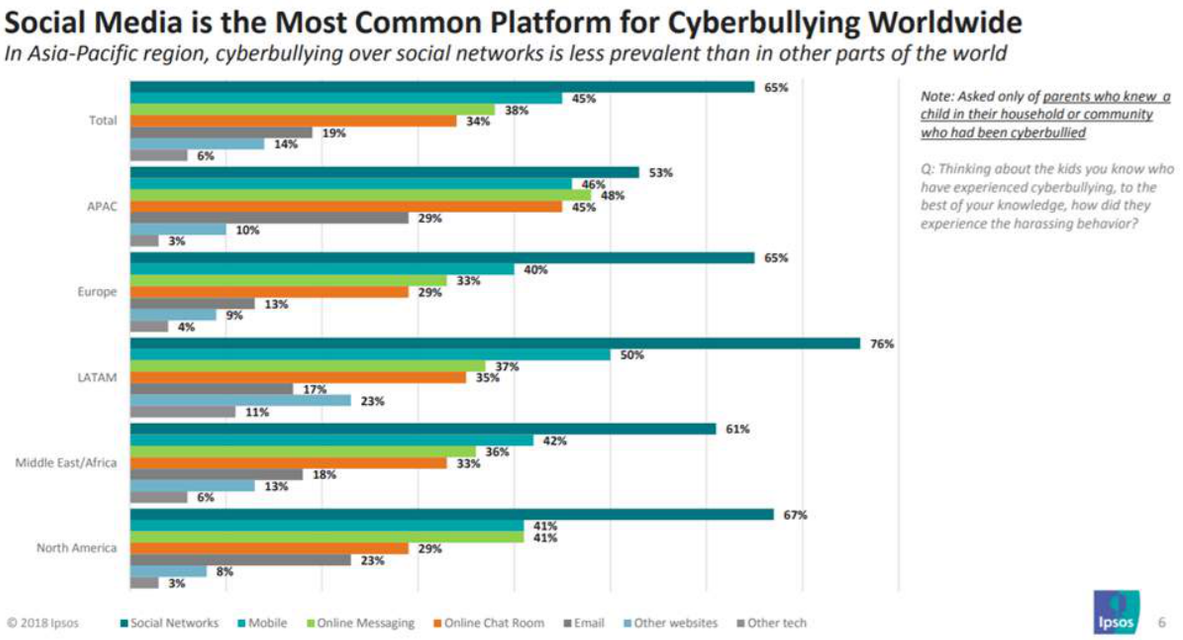
Kaspersky Lab (2016)
https://www.youtube.com/watch?time_continue=4&v=0Xo8N9qlJtk

The Majority of Cyberbullying Is Done By A Classmate of the Child Being Bullied



Note: Asked only of parents who knew a child in their household or community who had been cyberbullied

Q: To the best of your knowledge, was the person doing the bullying a...?



TOOLS AND METHODS FOR PREVENTING CYBERBULLYING

Awareness-raising the promotion of understanding about cyberbullying are essential as well as ongoing discussion to ensure members of the community are not unwittingly facilitating cyberbullying because of a lack of understanding.

The key elements of an effective approach to preventing cyberbullying are:

- Understanding and talking about cyberbullying.
- Integrating cyberbullying prevention into relevant policies and practices.
- Ensuring reporting routes are accessible and visible.
- Never reply to upsetting messages or images. Instead, keep evidence and the report the incident.
- Become familiar with the account management tools of the services you use, particularly privacy and blocking features.
- Promoting the positive use of technology.
- Promoting online safety and digital literacy
- Evaluating the impact of prevention activities.

5 Ways to Stop Cyberbullying

Common Sense Media (2017) https://www.youtube.com/watch?v=zASfp7_-lhg

REPORT CYBERBULLYING AND GET SUPPORT FOR VICTIMS

In order to stop cyberbullying it is essential that victims, confidantes and observers report what they have experienced, heard or seen to a competent, trusted person and also to use the reporting tools provided by social media companies.

Most social networking services have features that allow users to report and/or respond to cyberbullying. Social media services should remove cyberbullying material that is reported to them. Depending on where the cyberbullying material is posted, you might need to collect evidence of cyberbullying material before you report it to the site.

The target of cyberbullying may need emotional support. Key principles here include

- Reassuring them that they have done the right thing by telling someone.
- Recognising that it must have been difficult for them to deal with.
- Reiterating that no-one has a right to do that to them.

SUMMARY

- The prevalence of digital technologies in educational and social use has meant that they now have an impact on the psychological status of frequent users.
- Technology addiction is a real ailment in modern society, and has many aspects including emotional, psychological, environmental and biological.
- Particularly addictive are online gaming and social media, due to their compulsive reinforcement patterns, and high interest and stimulation features.
- Adults in responsible positions have a duty to recognise symptoms of technology addiction, and know how to address it.
- Cyberbullying is a significant and new phenomenon that exacerbates traditional bullying, using technology and exploiting technology addictions.
- Teachers, parents and other adults need to take action to prevent and address cyberbullying, first by identifying it and then by reporting and confronting it.
- Victims of cyberbullying, and indeed all young people who are potential victims, must be taught how to deal with it, initially by reporting it, and victims should be given appropriate support.

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LESSON 3.3 - DIGITAL TECHNOLOGIES FOR SOCIAL WELL-BEING AND SOCIAL INCLUSION

INTRODUCTION

Have you ever thought about social media like an intruder tool that takes people apart from their families and friends by connecting them to the unreal world while making them abandon the real one? Well, if you think so, you're not right! Using social media in the right way may not only develop your existing real relationships, but help you build others and also serve you well during the process of teaching.

Like all technological innovations, social media also have negative and positive impacts. However, recent studies clearly demonstrate that digital technology and among them social media have the potential to connect people to each other, to improve quality of life by reducing loneliness and social isolation, and to pay attention on their mental and physical well-being.

The big marketing organisations publish every year the landscape and trends on social media. According to the surveys of 2018, social media is turning from text-based content and platform design to mobile-only networks that enable users to share real-live and more personal stories messages through multimedia.

By outlining the benefits of using social media we'd like to develop awareness in right use of digital tools for social inclusion, for maintaining physical and mental wellbeing and in encouraging online creativity.

WHAT IS SOCIAL MEDIA?

The emergence of social applications is linked to the Web 2.0 concept that began in the early nineties.

Web 2.0 has fundamentally changed the nature of internet by turning the former static "read-only" web into "a collaborative medium, a place where we all meet and read and write". (Tim Berners Lee, 2012). Web 2.0 brought a new age in Internet history by generating deep changes in everyday communication and in all segments of social life.

We can say that web 1.0 was an online library, where the content can be searched for and read, while in web 2.0 the we are no more simple "consumer", we become co-authors, we can create, upload, share, modify, and evaluate the online content on the World Wide Web.

Social media is the essence of web 2.0: it turns the Internet into a common creation, collaboration and communication platform. There are numerous web-based programs that encourage us to be present in virtual communities, publish, share ideas in videos, documents, images, concept maps, thus leaving our digital footprint on the web. Examples of social media are: Youtube, Flickr, Picasa, Animoto, Prezi, etc. - but most web 2.0 applications also belong to this category.

All operate in a similar way from a technical point of view: the application runs on a central server, registered visitors can upload, edit, create their own objects (mental maps, videos, images, etc.) providing some description about it.

Usually the authors of the online content may decide to share it with others publicly or keep it private. Guests who have not registered can move from one

public content to another, but sometimes the search is only allowed if we register first.The main areas of the services social media as follows:

- Communication, discussion (like Skype, forums)
- Social networking (like Facebook, WhatsApp, LinkedIn)
- Creating, editing, sharing digital contents (like Youtube, Flickr)
- Social games

ONLINE COMMUNITIES FOR SOCIAL INCLUSION

An online community is a group of people interacting and collaborating to achieve a common goal. People join online communities for many reasons - perhaps they prefer similar things, activities or lifestyle. It has led to the evolution of a new social platform – an online community - that interacts with the real world. On one hand we have more possibilities to keep contact with our family members, friends and business partners, while on the other hand we can develop new relationships at low risks that might be turned into real personal contacts in the future.

There are two things that motivate online community members to gather and stick together:

1. The need to contribute to the community

2. The possibility of being benefited from the community

Not only online communities gathered and retained different groups of relative strangers, but they can also overlap with each other and even nest within one another. It happened with Yelp, Wikipedia, Follr, Digg, Flickr, blogs and YouTube, which you've surely learnt about. For example, people enjoying the dining experience come together on Yelp. Those who deal with the internet-dictionary-search engine movement use Wikipedia. Anyone can create an online community for their topic or interest on platforms, e.g. Follr. These are all online platforms where people with a common interest or purpose interact.

Characteristics	
Social media	**Online communities**
Bound together by pre-established interpersonal connections	Bound together by a common interest or topic
Each connection has his or her own social network	Any person can be a part of any community
Characterized by a spider web-like "network" structure	Characterized by a more complex overlapping and "nested" structure than social media networks

According to a definition by **Jenny Preece** (Preece, J., 2000) we might say that an online community consists of different parts:

People - who interact with others in order to fulfil their needs or to get involved in the community (leadership, moderation)

Common goals - common will or goals, such as having the same interest, a need for exchanging information or a claim for a service that can be a good foundation to create a community

Platforms - in the form of mutual hypothesis, rituals, regulations and acts that drive human interactions

Computer systems - that make social interactions possible, transmit them, and helps to create a sense of belonging

Based on them, we know several different online communities that have similar functions but can clearly be distinguished from each other by the technological implementation they apply.

Types of communities

1. Members don't have to be present at the same time: they communicate by leaving message (By emails, bulletin board, online forums, blogs)
2. Members are communicating real time (Via chat programmes, instant messaging, applications like WhatsApp, Skype, Viber, Messenger, etc.)

https://youtu.be/qVnsaVo725k

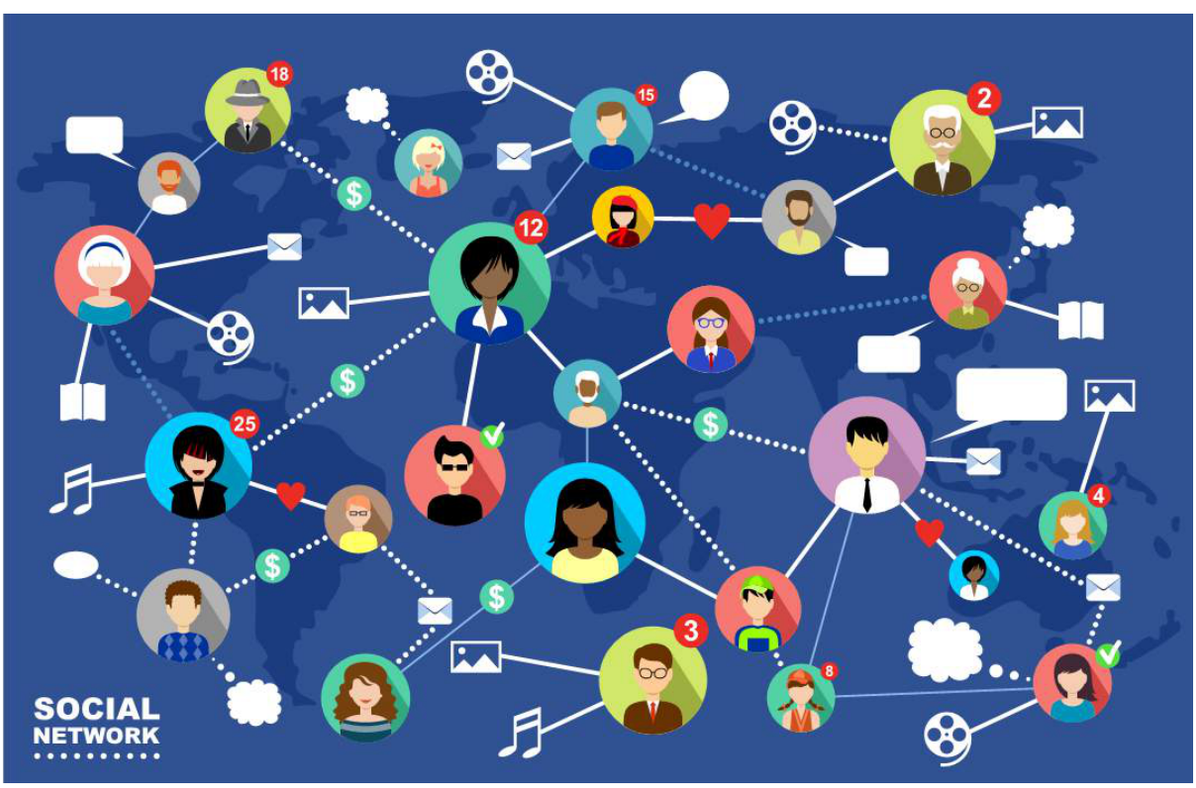
Involving online communities in teaching makes it possible to break up with the old teaching methods and implement a more detailed, active, situated pedagogy instead as it was designed to make communication and interaction between people easier and faster.

Benefits of communication through online communities:

- **Cooperation and team working** – providing that tasks are properly planned, disseminated and followed up, social media can serve as a place of team working to solve problems on the basis of cooperation and negotiation.
- **Community and participation** – Participating in the life of the community has been much easier. People can discuss topics they are interested in, share contents, discover information, create further online groups, etc.
- **Audience and participation** – Students should take the audience into consideration every time they share their work online. So, they learn how to find a suitable form and style to do it, and how to handle unfriendly reactions.
- **Social learning** – social media provides a constructive environment for students to raise questions or to express their opinion as well as to discuss problems and to share their opinions.

SOCIAL NETWORKING

According to social scientists belonging to groups is simply the basic human needs of people which can be achieved more cheaply and easily via Internet so obviously those who can use this possibility.



Source: Depositphotos

Social networks are online tools to create relationship with people online through to Internet. The users have to register for establishing a network of relatives, friends, acquaintances, colleagues, they can read or write comments, upload and/or download photos, videos, audio, and can rate them as well.

There are many positive and negative stereotypes on social networks.

- Many people assume that belonging to virtual communities alienates and endangers real human relationships. People spend more time on the web than with their own family. However; researches didn't prove this.

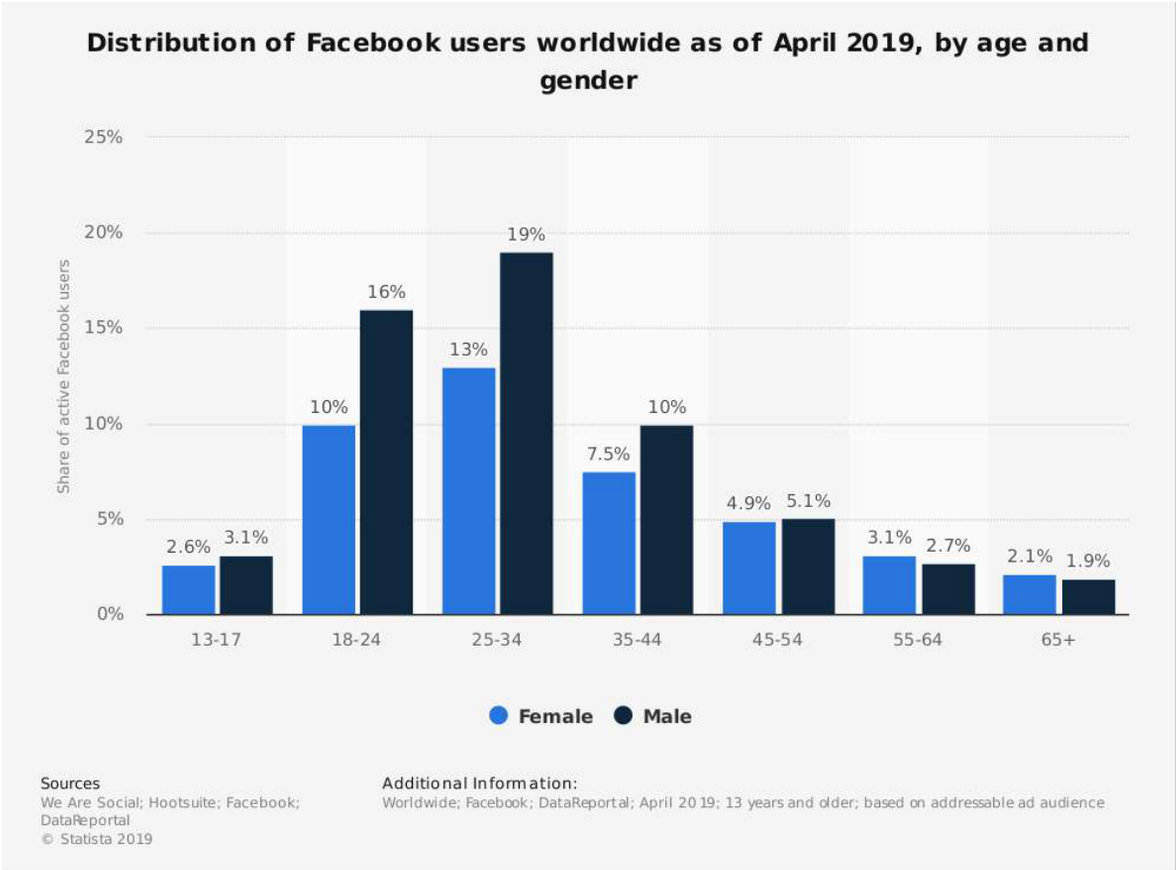
- Members of an online community are more willing to help each other - without expecting any return – than they are in the real-life community. People often get help from complete strangers from some social network.

- Net communities are usually more opened than real communities. This does not mean that there are no exceptions. There are some professional communities where new members can only join with the recommendations of two existing members. (According to researchers real small communities are more closed and new members are accepted harder.)

- In online communities organised for sharing contents there is a strong control against "free riders". Some people are only "consumers" without supporting the collection. They will be banned after a certain time.

Facebook – the most popular social network

The most successful and most popular social networking service to date is Facebook with over 500 million registered users. Facebook provides rich functionalities for users to build connections and share information with people and organizations online. While some other social media sites are highly related to youngsters, statistics of Facebook users show how popular it is among different age groups worldwide.



Source: http://www.statista.com/statistics/376128/facebook-global-user-age-distribution/
(last accessed in June 2019)

The figure from the survey in 2019 clearly demonstrates that the dominant groups of the Facebook belong to the young generation.

Another remarkable trend in using social media is a movement towards the mobile applications, what make sharing personal, real-life information much more easier, what might make people happy from one side, but can be dangerous at the same time what might be risky mainly for the most vulnerable groups like young and older adults.

Regarding the type of the objects shared online there is a strong turn from text-based contents towards the visual objects like pictures and videos. Consequently, Youtube has been more-and-more popular during the last years all over the world, what has a lot of positive impacts on supporting learning, social inclusion and well-being of people, even for teachers to share video tutorials preferred by the new generation of students. However, the schools and teachers have here high responsibility to develop the skills of their students in selecting among the contents and to understand the negative aspects of sharing personal videos on public platforms.

LinkedIn – the network of professionals

Professional social networks are useful to provide opportunities with a strong focus on career-related growth. These types of social networks connect professionals of different areas, while others are focused on specific occupations or interests. The most well-known is LinkedIn.

It has gathered more than 135 million members since it started in 2011, making it the largest online professional network. Users here have the opportunity to build relationships with other professionals by making connections and joining relevant groups.

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APPLICATIONS FOR MENTAL AND PHYSICAL FITNESS

There is strong evidence that proves how physical and mental health is related, as Hippocampus - the center of emotions and feelings in the brain - remains healthy and increases when the person is physically fit. Moreover, it is widely known that regular exercise is good for the body and it is one of the most effective ways to improve mental health. Regular exercise can have a positive impact on depression, anxiety, relieves stress, improves memory, helps sleeping better, and boosts overall mood.

Mental and emotional benefits of exercising

Memory - Doing exercise increases the level of endorphins in the body, stimulates the growth of new brain cells and prevents age-related decline.

Self-esteem - When regular physical activity becomes a habit, it can strengthen the sense of self-worth and makes you feel strong, powerful, and even better looking. It helps you develop a sense of achievement, as you meet your exercise goals.

Sleep - A short exercise in the morning or afternoon can help regulate your sleep patterns, while doing exercise at night or doing relaxing exercises such as yoga can help you to sleep well.

Energy - Increasing your heart rate several times a week by doing exercise provides you with the feeling of ready to do anything. You can start off with a few minutes of exercise every day, and increase your workout as you feel stronger.

Resilience - Being faced with mental or emotional challenges of life, doing exercise can help you cope with them in a healthy way. Regular exercise boosts the immune system and reduces the impact of stress, so you can stay healthy as well.

Keep your body fit by using online tools

Since a great number of online applications are available there's no excuse to neglect physical fitness. People can use them to exercise at home or even at work or when they are at school, especially, because some minutes of it can be useful. They are accessible through different devices (smart watch, phone, PC) and via android, Web, or IOS applications.

Further examples:

Yoga Studio is a popular yoga application containing more than 70 ready-made yoga and meditation classes with levels ranging from beginner to advanced and lasting from 15 to 60 minutes.

Fitbit is one of the many apps that counts your steps, but it can also be used to calculate the calories burned and register active minutes, monitor heart rate ,etc.

BodySpace is a social fitness platform combining the benefits of virtual personal training with the world's largest online fitness community.

Short – some minutes – **body workout apps** – for example: 7-Minute Workout (by Wahoo Fitness) and The Johnson & Johnson Official 7 Minute Workout have been developed to provide a seven-minute workout experience that takes into account the needs of a person who is either busy, travelling, or new to fitness. Both apps show only what you need to complete in some minutes and they're entirely free.

Stay mentally fit!

Keeping your mind mentally fit isn't as difficult as getting into sports. You can do mental exercises adding them to everyday activities like:

- reading
- daydreaming
- relaxing
- game-playing

You can perform them when being active, like when you're learning a new song or playing a game, or can do relaxation and visualization exercises while you're having a rest. There are a lot of online applications with which you can stay mentally fit, or develop your mental performance. They are accessible through different devices and via android, Web, or IOS applications.

Some examples

Peak is the collection of mini-games covering subjects including memory, language, mental agility

Fit Brains Trainer offers more than 35 games to keep your daily practice by testing your memory, concentration and skills.

Calm focuses on meditation, breathing, sleep, and relaxation. It delivers meditation sessions that help you to get rid of the daily stress by performing breathing programs, music, and sounds of nature.

SuperBetter is a game-playing application aimed at increasing resilience and the ability to remain strong, optimistic, and motivated.

DIGITAL ACCESSIBILITY FOR SOCIAL INCLUSION

Basic concept

> "*Traditionally, ICT users think that digital accessibility is only a task for ICT professionals when designing and implementing websites and mobile apps. They also think this is something for very specific people, mainly those ones with disability. However, everybody can contribute to accessibility of digital information by ensuring that common files that one can create are accessible: word processor, presentations or pdf files are good examples.*" (wamdia.eu)

What is digital accessibility?

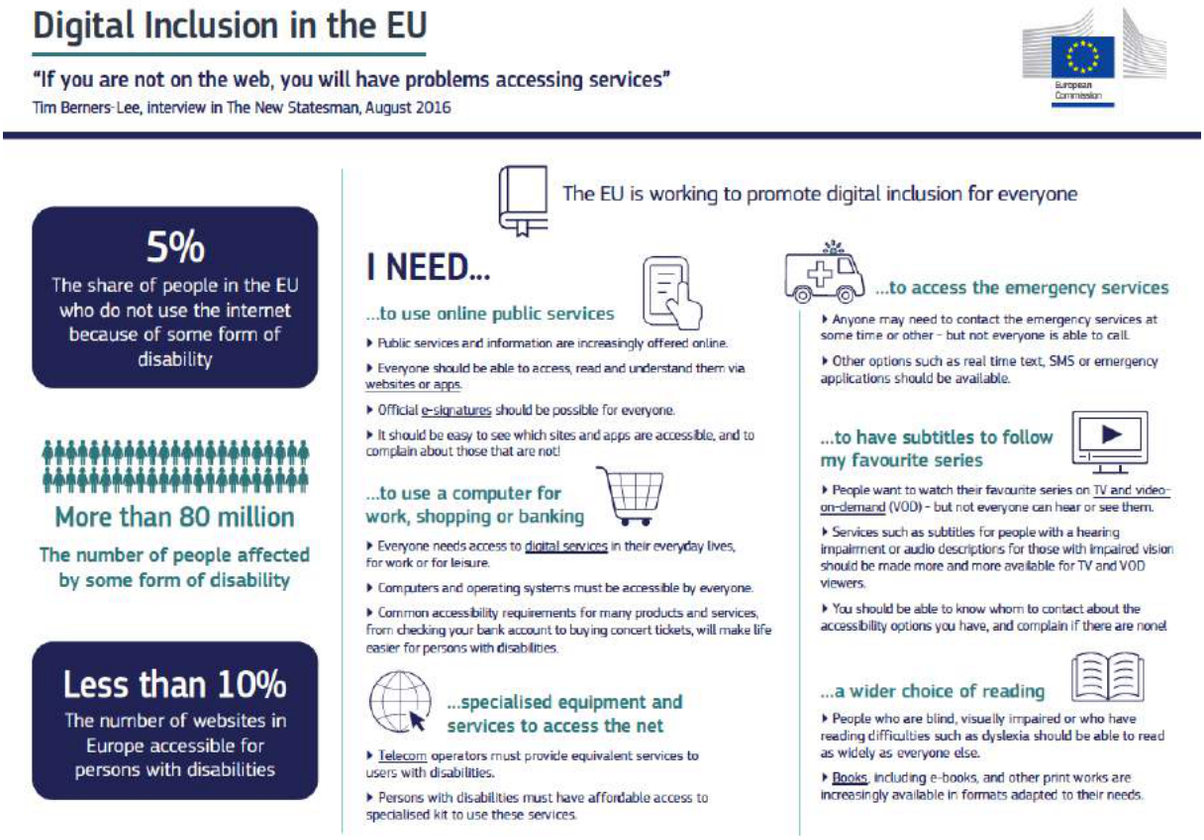
There are plenty of so called "assistive technologies" designed for decreasing the negative impact of a disability, however, without the active contribution of all citizens, policy makers, IT professionals, teachers, students and business men, even the most sophisticated assistive tool won't be able to help avoiding the difficulties the people living with special needs face everyday when they try to access to information.

Digital accessibility is the electronic version of physical accessibility (like a barrier-free stairs), it is about developing software, web content, electronic documents and hardware equipment in a way that people with different needs of disabilities can access them.

In the information society social inclusion is unimaginable without focusing on digital accessibility. Digital Accessibility enables access to digital information and services independently of the users' special needs. It is aimed to avoid discrimination in digital services and tools and to provide equal access and interaction for all of us.

Digital Accessibility Strategy of the European Union

The European Union joins the global awareness effort by publishing the infographic below in 2019. The 'Digital Economy and Society' legislation demonstrates "how Europe is there for everyone, regardless of your ability. " (EU Commission, 2019)



Source: EU Commission, Digital Single Market: Accessibility: Essential for Some, Useful for All Accessibility: Essential for Some, Useful for All (2019)

Web Accessibility

https://youtu.be/20SHvU2PKsM

The concept and rules of web accessibility was elaborated by the organisation which could be named the founding fathers of internet. The World Wide Web Consortium (W3C), through his Web Accessibility Initiative (WAI) brings us the motto: *'Strategies, standards and supporting resources to help you make the Web more accessible to people with disabilities.'*

Web Accessibility: Essential for some, useful for all
https://youtu.be/3f31oufqFSM

Their Accessibility Principles have become in fact the core principles to observe in web accessibility, even used by the above mentioned EU legislation. These are included into the table below:

Perceivable information and user interface	Operable user interface and navigation	Understandable information and user interface	Robust content and reliable interpretation
•Text alternatives for non-text content •Captions and other alternatives for multimedia •Content can be presented in different ways •Content is easier to see and hear	•Functionality is available from a keyboard •Users have enough time to read and use the content •Content does not cause seizures and physical reactions •Users can easily navigate, find content, and determine where they are •Users can use different input modalities beyond keyboard	•Text is readable and understandable •Content appears and operates in predictable ways •Users are helped to avoid and correct mistakes	•Content is compatible with current and future user tools

Accessibility Principles
Source: Web Accessibility Initiatives
(https://www.w3.org/WAI/fundamentals/accessibility-principles/)

Digital tools for enhancing digital accessibility

The 'assistive technologies' and the 'adaptive strategies' are the tools for promoting digital accessibility. Both of which touch upon either specific software or tactics, methods used to improve interaction with websites and digital information. Some of them come built-in with the computer, smartphone or any other device and some are solutions to be installed separately.

Screen readers

Screen readers are software programs aimed to help the visually impaired to access electronic information and allow interaction with digital devices by converting visual information into speech. It doesn't only read plain text but it is most of all intended to 'read' the whole information, like speaking about images, links or structure of the digitalised information. Apart from several commercial products, a free and open source solution is NVDA.

Alt-Text

Closely related with screen readers, alt-text or "text alternatives" are brief descriptions for any non-text content such as audio, video, images, even icons or labels and other user interface components that lean on visual ability.

Voice recognition

The flip side of screen readers, evolution of the earlier text-to-speech, are the speech-to-text improvements, which have developed into voice recognition software. It allows the control of digital devices by the voice, not just writing text but first and foremost recognising orders on commands, applications and managing functions of technological devices.

Screen magnifiers

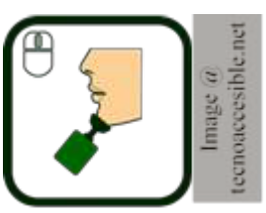
Similarly to a real magnifying glass, digital screen magnifiers are applications or plugins which can magnify information as you pass it above that position on screen. Zooming on webs or documents, enlarging images, changing font size or applying similar methods can contribute to overcome the challenge of reading or watching.

Contrast adjustment

Contrast adjustment is a kind of adaptive strategy to make content distinguishable with the help of contrasting foreground and background colour.

[CAPTIONS] While subtitles assume that the viewer doesn't understand the language, captions are transcript text for multimedia content for people with hearing impairment.

Selection switches



For people who cannot properly use a keyboard or mouse, the interaction is simplified when selecting options.

STUDENTS ON SOCIAL MEDIA

> *"The students sitting in now-a-days classrooms are constantly overwhelmed with information, however… whether it will lead to a generation that has lost its touch with real life, or whether on the contrary, these kids become super-communicators who are constantly in touch with the world at large" is mainly the responsibility of teachers.* (Hellinga, R., 2008).

The social media reached first the students, who learned quickly how to use the tools for building networks far away from the classrooms controlled by the teachers. The phenomenon in the picture is familiar to all of us. Today's secondary school students are members of the so-called Generation Z.[7]

They use info-communication technologies and digital devices with confidence and proficiency having encountered computers and mobile phones as part of their everyday lives from childhood. They grow up in the world of mobile communications, and their preferred communication mode is the social media interaction.

According to the scientific research of the last years, the learning attitudes of the students differ fundamentally from that of their parents and grandparents.

They are:

- fascinated by new technology. They are intuitively using the IT devices and navigate on the Internet, due to the fact that they spend many hours every day playing video games and being connected to the Internet;
- not bothered too much about the way technological gadgets work and mostly not even interested in that;
- reluctant to read a large amount of texts, they are more visually literate than earlier generations;

[7] The theory of 'generations' was developed in the early 1990s by the American sociologists Neil Howe and William Strauss. Each generation has its own 'character' – a character shaped by their most relevant economic, social and cultural activities and attitudes. Generation X was named to represent an unknown factor, and Y and Z were selected as the letters following X.

- commonly using more than one medium at a time: they watch TV, talk on mobile phones, listen to music or the radio simultaneously - they are familiar with "multitasking";
- fast at information consumption: they are used to receiving information very quickly, and they expect immediate responses;
- using technology intensively in their socialisation: they are willing to join physical, virtual and hybrid communities as well;
- New technologies and networking tools are attractive to students and can motivate their participation in the learning process. These online tools and teaching materials are not a substitute for traditional teaching methods but may be complementary to teaching activities.

With this background it is not surprising that social interaction in the classroom is important to them there, as well as in their free time. These relationships can be the generators of learning for them, particularly through team work which must be given particular emphasis in their education.

The importance of creative work is focused by the Digital Competence Framework of Citizen as well, which defines a set of competences in the area of “Creation”, composing the basic ICT skills for creating digital contents and sharing them online with others. One of the most significant benefit of social media is that it can be used for self-expression, as it enlarges the living space of the individual and offers various tools for expressing ideas and feelings by applying a great variety of digital contents.

Using social media in classroom can assist teaching in many ways, like:

- getting to know what the students are doing online,
- revealing what they are interested in,
- keeping them away from the negative effects of the social media,
- showing them how to create a positive digital footprint of their own (sports, school results, awards, etc.),
- helping students to express themselves, and developing their communication skills,
- guiding them into civil engagement,
- showing therm, how to use this tool for conducting research, sharing their work, getting feedback.

RAISING AWARENESS OF RISKS

Even if our students are in possession of technology, have the skills to use the devices and they feel urge for being connected in online communities, they might not be aware of the dark side of social media. It is the responsibility of their teachers and parents to prevent them from being abused in the community platforms that is supposed to support them.

If they are not cautious enough, young aren't able to avoid cyberbullying like emotional abuses, when they are attacked. Facing with cyberbullying can be very difficult for teenagers armless anyway, so it is the task of teachers and parents to draw their attention to the possible risks. The teachers have to take time in the classroom to discuss the most important evidences they have to be aware when connecting to any kind of social media.

FACTS TO BE AWARE OF ...

Protect personal data!

- Social media applications are broadly configured by default to getting the most possible information about us and to allowing the largest amount of people to have access to it.
- At the moment that we publish the information we lose control over the flow of that data.

Configure properly!

- Unless we configure properly the privacy settings of these applications, when we enter and publish data about ourself, preferences, habits, schedules, contacts, photos, shopping, travels and doings, all of this could fall into the wrong hands.

Be critical!

- The news and other information that people share through social media is seldom tested.
- Fake news and hoaxes are spread out by social media as their natural habitat.

RISKS TO PAY ATTENTION ...

- The personal information we share could be used to damage us or our relatives.
- Widely proclaimed own plans or vacations might state burglars whether you are at home or not.
- As long as name, phone number, email, ID card, e.g., identify us, could be used to impersonate us or to send us false offers customized to cheat us.
- Unprotected bank details might end on fraudulent charges to our accounts.
- Misinformation might cause to take wrong decisions or bring population to blunder.

STRATEGIES TO APPLY ...

When sharing our information by social media

- Spend a moment looking at the privacy settings on your preferred social media and then adjust them to your convenience. Strangers may not need to be kept up with your life details.

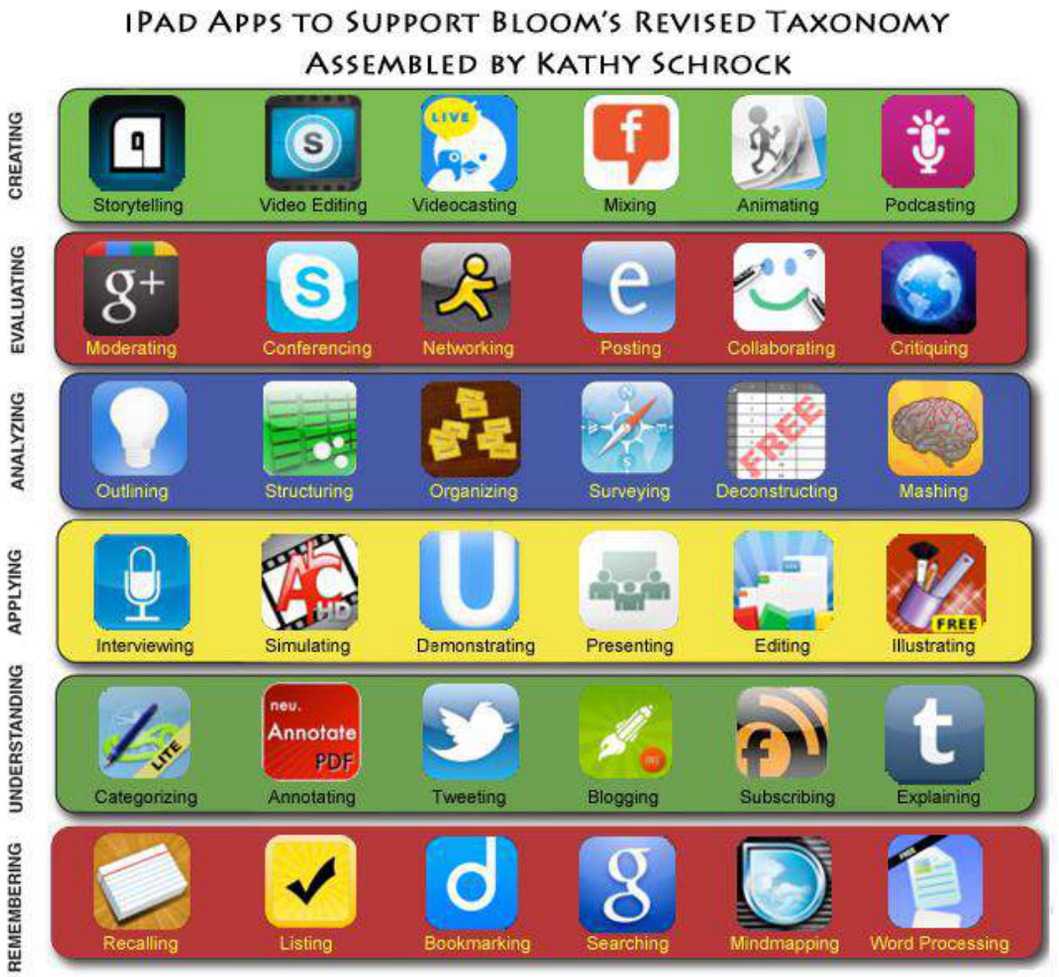
- Think it twice before disclosing personal data. Be cautious.
- When receiving information by social media:
- Use your intuition and think critically. Probably you didn’t win that fabulous car in a prize you never applied for.
- Check the information source. Quick information exchange sometimes crash with reliability.

RETHINKING THE TEACHING METHODS

All of our students are members of one or more social networks. What makes them interested? A continued online presence is a characteristic they have. They inhabit virtual communities, and a great part of their free time is spent on the worldwide web. Even relationships may be built on social websites, and many cannot imagine a world without mobile internet or social media.

How can all this be turned to their own good, i.e. to their mental well-being and self-development?

21st century skills are not necessarily best developed via frontal, teacher-centred teaching methods, therefore teachers have to move towards more student-centred, active learning methods and organise collaborative work by integrating creative online activities into the classrooms.



During the last ten years the classical version of the Bloom's taxonomy was revised according to the skills needed for enabling students become a conscious user of social media networks, to understand the risks while being connected and to use the web 2.0 tools in the right way for their self-development and well-being. Practical, group-based tasks can be applied to develop the students' 21st century skills, such as creativity, communication, critical thinking - which is important for conscious internet use, too -, persistence, initiative, leadership skills, reading and writing skills.

CREATIVE CLASSROOM ON CYBERSECURITY

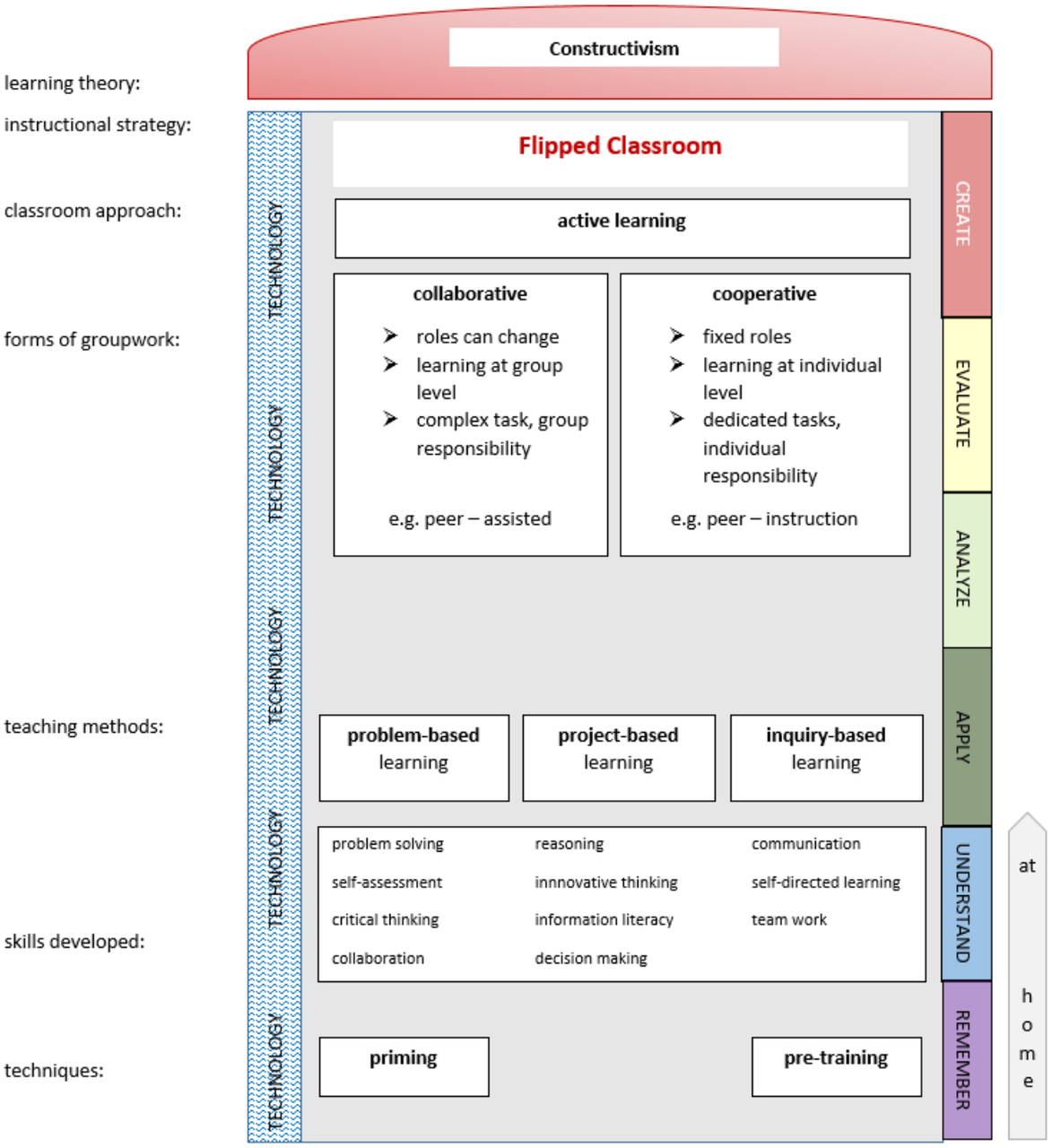
In this section we invite teachers to "flip" their classroom in order to empower students to manage risks and to use digital technologies safely and responsibly.

Flipped Classroom method is a new way of teaching and learning whereby **students receive tasks related to the new topics before class, generally in some digital format,** which they should then study before taking part in discussions and collaborations about their learning in class**. Watching the video you will get an explanation from one of the innovator of the method from the American secondary school teacher, Jon Bergmann.**

„Flipped Learning is a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter." (formal definition by the Flipped Learning Network)

This approach allows students to learn about the topics outside of class and at their own pace. Then they can come to class already informed and prepared to engage in discussions on the topic. In this way they can apply the knowledge they have gained through active learning, spending their class time undertaking more active and collaborative activities. In applying this model, a more efficient and active use of class time is anticipated by focusing on the practical application of knowledge during class.

An effective and successful flipped classroom needs careful preparation, and well-informed lesson planning. The normal requirements for lesson plans apply equally, if not more so, when applied to Flipped Classroom lessons. The following figure shows how the Flipped Classroom fits into constructivist learning theory, and how it is compatible with different approaches and techniques in active learning, and how it integrates technology for developing the 21st century skills of students.



How to plan the creative classrooms for processing the topic? The teacher has to

- Collect or prepare digital contents relevant to the selected topic of cybersecurity. The innovators of the methods (two American teachers) created videos saying that the students are more open to watch a short video (even several times) than reading long explanations. However, the teachers, who have just started using the methods, can search for existing videos or any kind of Open Educational Resources (OERs) freely available on the Internet.
- Share the digital content with the students and ask them to study/watch them before the class.

- Plan the classroom work very carefully, including detailed description of the activities of the students, and scheduling them precisely.

What are the benefit of the method against the traditional teaching methods?

In the classroom:

Active learning

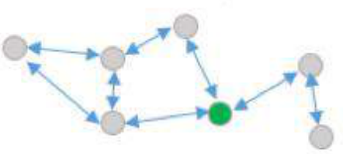
students

- ✓ apply new knowledge
- ✓ ask questions and get immediate answers
- ✓ better understanding

the teacher

- ✓ can really differentiate
- ✓ decides how much time to spend with each student
- ✓ better classroom management

✓ increased interaction (student-teacher, student-student)



win-win situation

- ✓ students have more control over their own learning process
- ✓ higher order skills are developed
- ✓ better results
- ✓ transparency for parents.

Why this method could be especially relevant for organising lessons on cybersecurity? Most of the students have some kind of knowledge, experiences about negative stories even if it happened not themselves but with friends or relatives. All of them are interested in how to protect against the threats, but probably they will be more open to discuss such topics in small groups after preparing themselves at home alone for the questions by studying the materials given out by the teacher before the lesson.

WEB 2.0 TOOLS FOR TEACHERS

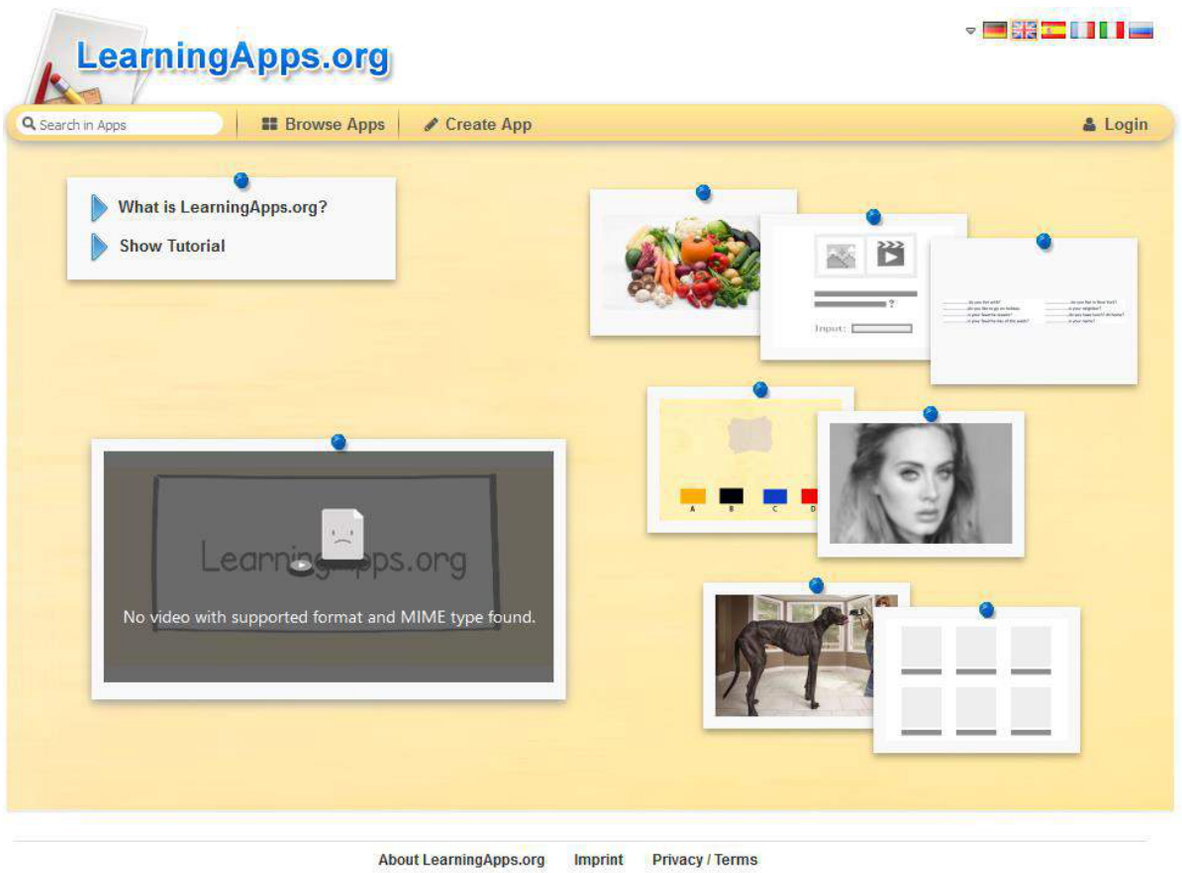
Moving towards 21st century methods, the teachers have to use online applications for creating motivating digital learning for their students. In this section we would like to introduce an easy to use free online tool available in all European languages, what can be applied for planning interactive flipped lessons as well.

At the **LearningApps** (www.learningapps.org) page we can find several tools (so called blocks) that can make students motivated to watch a video, or to process information covered in a video. The page offers customizable games, that help understanding, memorizing, or checking the mastery of the learning material. We have the opportunity to create matching activities, crosswords, word search, just to mention a few.

If we make more blocks to one topic, it is advisable to put them in a matrix, so that students find in one place all the exercises related to a given topic. Here is an example for a matrix I prepared for my students in the topic of the human brain: https://learningapps.org/display?v=piema7guj16.

Students can create blocks themselves, it will also help to deepen their knowledge.

A huge benefit of that page is that we do not need to produce all content ourselves: by tagging we can save public blocks into our own collection, so we can easily create a platform for our students to practice a given topic. After login, the page works as a virtual classroom as well, so if we lack a content sharing application, we can use this platform for our flipped lesson.



SUMMARY

By outlining the benefits of using digital technology and especially social media networks and online communities for social inclusion we'd like to invite teachers of secondary schools to put special focus on developing awareness of their students to make good use of tools and applications and encourage them for online creativity.

While the main focus of the lesson were the positive aspects of networking technology, we explained the possible risks and threats of them as well, in order to emphasise the importance of developing cybersecurity awareness of students, and help them to elaborate their own strategy for protecting their own physical and mental well-being, for recognising the first signal of addiction caused by overwhelming usage of digital devices and/or applications.

In the second part of the lesson we explained why the teachers have to rethink their teaching methods, and gave introduction to the new pedagogical approach of flipped classroom model, what demonstrates a movement from the traditional frontal pedagogy towards more student-oriented methods for supporting the involvement of students into their own learning process and for establishing creative classroom work with applying digital tools and open educational resources as well.

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- Web Accessibility Initiative: https://www.w3.org/WAI/
- Evaluating Web Accessibility Overview (WAI), https://www.w3.org/WAI/test-evaluate/

LESSON 3.4 - PROTECTING THE ENVIRONMENT

INTRODUCTION - ENVIRONMENTAL IMPACTS OF DIGITAL TECHNOLOGIES

The increased use of computers and all digital devices are changing the way we live our lives. The massive impact is called Digital Transformation. Among all the benefits in communications, business efficiency, entertainment etc, there are potential negative effects on the environment. Like any other tool, ethical and

responsible use and disposal must be addressed and depends on human behaviour. Education and regulation are required to make sure the tools are used wisely.

Short life cycles and constant updates and new versions of our favourite technology mean that a lot of waste product is generated. Highly specialised disposal methods must be used to dispose of waste electronic products, and also of the waste produced in the manufacturing processes. This waste is called "techno-trash," and it contains all sorts of hazardous materials that are very unsafe for the environment. They need to be disposed of using special methods.

Having said that, digital transformation can also be a positive for the environment, giving us data and measurements that alert us to actions to keep our planet safe and sustainable. Managing the environment and developing policies to promote responsible actions for all is well supported by technology.

SUSTAINABLE HUMAN- COMPUTER INTERACTION

The increased use of technology is associated with increasing environmental threats, ranging from greenhouse gas emissions from manufacture to careless disposal of e-waste, or “techno-trash”. Outdated, end-of-life or broken IT equipment must be made environmentally safe and inert, or decommissioned, before it is disposed of, and fortunately, it is possible to recycle many components so that they do not end up in land-fill waste facilities.

Sustainable development has become an issue of concern and debate, and new ideas since the last two decades of the 20th century.

It is recognised now that IT system designers should be more environmentally responsible, for example by reusing resources from the discarded product and also being conscious of the problem caused by the huge volume of end-of-life products, and indeed the over-use of paper.

Recently, sustainable software engineering has also become a hot research topic, delivering new expert knowledge on sustainability in all stages of the software life cycle, saving time, energy and computing power for both the developers and the end-users. Power-hungry technology is behind many of the services we access on our power-light devices, depending on cloud services hosted in huge data centres. Unfortunately, more energy consumption means more greenhouse gas emissions, despite great advances in sustainable energy generation.

Users also have a role to play, and must be encouraged to use power management tools like sleep and low power modes when not in use.

SUSTAINABLE USE AND CONSUMPTION OF ICT

We have a responsibility to ensure sustainable use and consumption of ICT in our educational, work and leisure use of technology. This means we must find ways to reduce the harmful effect of our digital activity on the environment and society.

Many studies have been done on the harmful effects of technology on the environment, and experts have suggested a variety of ways to lessen these. Apart from factors around the manufacture and disposal of equipment, covered later in this module, there are ways in which technology can modernise communications and economic activities by replacing physical processes with the use of software,

computer systems and technology-based tools. For example, email has revolutionised communications, reducing the use of paper, as well as minimising mail sorting and delivery equipment, saving on emissions, pollution and unsustainable means of consumption and production.

This approach is included in the concept of Green IT, which is the approach of balancing the benefits and risks of ICT consumption to society and the environment posed by advancing technology, so that it has a minimum effect on the society and environment.

CONFIGURATION FOR ENERGY SAVING OPERATION

Compared with paper and traditional ways of working, computing and digital devices require power to operate. Despite new environmentally friendly energy production methods, power generation causes emissions and pollution. It is also costly, making up a high proportion of operating costs. So while our focus here is protecting the environment, the average SME could reduce its energy bill by up to 30% by implementing energy efficiency measures in its technology management procedures.

Some ideas for saving energy in the use of your digital devices include adjusting the power settings on computers so that the screens turn off an hard disks stop spinning after a period not in use, and switching them off at the end of the day.It is

sensible only to plug in a charger to a laptop when actually charging it, and disconnecting external devices like additional drives and printers when not in use.

Keeping equipment up to date is also a good idea, as new devices have better energy ratings, but of course you have to take the environmental impact of the manufacture of the new device into consideration as well.

PURCHASING AND DISPOSING OF ICT EQUIPMENT

The retail manufacturing industry is the second most polluting industry on earth, second only to oil. Given how important the production of ICT equipment is in modern societies, we must make every effort to be prudent in what we buy, and to make sure that the manufacturers we buy from are conscious of the effects of their business on the environment and take steps to minimise it.

CONSCIOUS BUYING - CHOOSING SAFE, EFFICIENT AND COST EFFECTIVE DIGITAL MEANS

We are getting accustomed to the “throw-away” method of managing our possessions in modern society. In general, it is estimated that only 1% of the materials used to produce our consumer goods are still in use six months after sale. Mass production and lower costs make it more attractive to buy new things than to

repair and update them. Somewhere, the value of craftsmanship has been lost. Price and speed are trumping value in this world of consumerism.

As we watch the increase in the amount of rubbish we accumulate, we are becoming aware of the negative effects of replacing broken or just old devices and the concept of “conscious consumption” is driving people to seek out ways to make better decisions about what to buy and to look for a solution to the negative impact that consumerism is having on our world.

Sustainable, environmentally conscious manufacturing processes contribute to energy efficient production, but it also embraces moral and socially conscious topics such as equal pay, prevention of counterfeit goods and human trafficking. Also, responsible farming practices and overproduction of goods should be at the forefront of consumers’ minds when making these choices.

OPTIONS FOR RECYCLING ICT TOOLS (BATTERIES, PRINTERS, CARTRIDGES, PAPER)

End-of-life electronic devices, also known as e-waste and e-scrap, include old computers, printers, scanners, mobile phones, as well as TV’s and music systems, and unfortunately most are still dumped into land fill sites, often after sipping to poorer countries where they are disassembled by disadvantaged people. "Many thousands of tonnes also find their way around the world to be pulled apart by hand or burned by the world’s poorest workers," the World Economic Forum repots.

As well as disposing of e-waste, recycling is a solution with many benefits. It can provide raw materials for new manufacturing, and there is a lot of precious metal recovered from recycled computers. Careful recycling also prevents the release of toxic chemicals into the environment.

AS consumers of the devices that become e-waste, consumers are responsible for recycling it. There are several options for recycling, starting with donating equipment which still works or can be refurbished. Local authorities provide recycling centres that accept separated waste, and there is also the retailers' take back programme for electronics and batteries, sponsored by Repak in Ireland.

It should also be remembered that printer toner cartridges should be disposed of properly as they contain haxardous material. Manufacturers usually provide guidance on an environmentally safe procedure for disposal of these, oftening enclosing a prepaid return envelope and label.

MANUFACTURER AND DISTRIBUTOR RESPONSIBILITY

The responsibility for safe and professional disposal of techno-trash also lies with manufacturers, and while we would like to believe that companies do this willingly and voluntarily, that is not always the case. Therefore, it is now a legal obligation, and the an European Commission Directive was issued as far back as 1988, covering the introduction, the recovery and the environmentally friendly disposal of electrical and electronic equipment and laying down the obligations of producers.

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT DIRECTIVE (WEEE DIRECTIVE)

Waste of electrical and electronic equipment (WEEE) such as computers, TV's, fridges and mobile phones is one the fastest growing waste streams in the EU, with almost 2 million tonnes produced annually.

WEEE is a complex mixture of materials and components with much hazardous content ,that can cause major environmental and health problems if not properly managed.

To address these problems two pieces of legislation have been put in place: The Directive on waste electrical and electronic equipment (WEEE Directive) and the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive). These directives are required to be transposed into national legislation in each EU country, and as a result, in Ireland, producers of electric or electronic equipment (EEE) must register with the Environmental Protection Agency and declare quantities of EEE that they collect for proper disposal. They must also finance the environmentally sound management of WEEE by joining a national compliance scheme. Annual reports are required to ensure that the WEEE take-back is managed properly.

OPTIONS TO UPCYCLE DIGITAL EQUIPMENT

We have been discussing the benefits and risks of the increasing amount of technology and devices in our lives, how to make sensible choices about purchase, use and disposal. We all have them in a drawer or on a shelf somewhere; outdated or broken electronic devices. Are they even good for anything now? Surprisingly, they can be quite valuable!
So what about being creative and reusing or upcycling some of the end-of-life equipment into something new and useful?

Upcycling is the process of turning an object into something else, for example using a leaky bucket as a stool. Or hanging old CD's on a tree to sparkle in the sun and keep the birds away from the growing fruit.

You can use an old phone as a remote control, or as an intruder camera in your house,

https://uk.pcmag.com/gadgets/32676/10-ingenious-and-odd-ways-to-repurpose-your-old-tech

LESSON 3.5 - EUROPEAN AND NATIONAL LEGAL REGULATION OF CYBER DEFENCE

INTRODUCTION, THE ACTUALITY AND IMPORTANCE OF THE TOPIC

One of the benefits of the accelerated development of the 21st century is that technological innovations have a great influence on almost every area of our lives. We walk around with phones in our pocket having computer skills that are at hand at all times of the day. Information can be instantly accessed anywhere and can be shared with others. Our society is increasingly unimaginable without the Internet and mobile devices. It is without question that all this has fundamentally shaped our lives, our everydays, our private sphere.

We are certain, that as a teacher, we are all faced with the fact that young people spend most of their time on the Internet. They keep in touch with their acquaintances there (even those sitting next to them), social media is an important part of their life and they strive to be more recognized by their peers. They also use it to look for answers to questions and problems in everyday life, even if they do not know exactly how to do it. They join communities, follow other young people, and they often fail to recognize the strong influence of what they see and read there on their opinions and actions.

Because of the above mentioned, it is important for us as educators to be aware of the effects and dangers influencing the growing up generations and to move comfortably in their “natural environment”. Only then will we be able to understand their problems, and help them.

In the previous chapters, we got to know the shadows of the Internet, the problems and dangers of its widespread use. In this chapter we would like to briefly describe how the European Union has tried and is trying to regulate this rapidly evolving, changing area, thus creating a safe cyberspace for its citizens.

EUROPEAN AND NATIONAL REGULATION OF CYBER SECURITY

> *„Cyber attacks know no borders but our response capacity differs very much from one country to the other, creating loopholes where vulnerabilities attract even more the attacks. The EU needs more robust and effective structures to ensure strong cyber resilience and respond to cyber attacks. We do not want to be the weakest links in this global threat.”*

Jean-Claude Juncker, in Tallinn on the State of Play of the Digital Single Market, 29 September 2017

THE DEVELOPMENT AND CURRENT STATE OF EUROPEAN REGULATION

According to data from 2017, “63% of EU citizens use the Internet on a daily basis and only a minority of 24% does not use the Internet at all. Internet usage across Europe is even higher, at 73%. This is above the global average (50%), but let us not forget that the data for very lagging regions are also part of the survey. The word "only" is, of course, very relative, as 24% of EU citizens also represent a total of 121 million inhabitants, so we can hardly talk about a small group.” It is also clear from this data that the issue of cyber security is more and more relevant for the citizens of the EU and influence their daily lives.
Initially, individual nation-states tried to develop their own cyber security systems on their own, but over time it became clear that effective protection and regulation could only be achieved at EU level. Over the past decade, EU experts have worked hard to achieve this single strategy. By 2016, the European Union could have said that it could give the Member States a unified cyber defence policy that can provide real help in dealing with threats. However, this was preceded by a long process:

- In 2001, the first EU document, called "**Proposal for a European Network and Information Security Policy**" was published. This proposal reviewed possible security threats, damages, and possible solutions. It also noted that the regulations at that time were inadequate to eliminate and prevent problems.
- In 2003, the EU adopted its first security strategy, called “**A Secure Europe in a Better World. The European Security Strategy**”. The strategy sets out the principles and clear goals for promoting the EU's security interests, and discusses the global, thus European challenges in detail. **The 2008 report, published as a review of the strategy, mentioned cyber security as one of the main challenges**.
- The **i2010 European Information Society Strategy** was launched in 2005. This document "included security as the fourth major challenge for the

Single European Information Space, such as increasing the security of the Internet against fraud, harmful content and technology failures, to strengthen investor and consumer confidence. Reliable, predictable and secure IT has been a critical condition for digital services.”