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**PERVASIVE COMPUTING**  
Eduardo Mendes Machado, Ph.D.

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# Digital Wellbeing



# Agenda

- **Startup**
- **Digital Literacy**
- **Digital Stamp**
- **Digital Footprint**
- **Digital Etiquette**
- **Digital Wellbeing**
- **Final Thought**



# Digital Literacy Development Pyramid - Curriculum Context

Digital literacy development pyramid  
Beetham and Sharpe 2010 inspired by  
Maslow's hierarchy of developmental  
needs (1943)

*Layer 4 (top): Extensive, open ended tasks*

*Layer 3: Developing repertoire*

*Layer 2: Intensive scaffolded tasks*

*Layer 1 (base): Access*



# Digital Stamp





# Swiping Generation

Digital **Footprint**

before **Birth**



Voluson	11.08.1984	RAB4-8-D/OB	MI 1.1	Dr. Moroder ecofetale.com
GA=12w3d		8.3cm/1.4/16Hz	TIs 0.1	02.02.2012 12:41:36

**We even have digital stamps FROM THE WOMB!**

**CRL 6.51cm  
GA 12w6d 71.8%**

The image shows a medical ultrasound scan of a fetus in the womb. A white line is drawn across the fetus to measure the Crown-Rump Length (CRL). The text "CRL" is written in yellow next to the line. In the bottom right corner, a yellow box contains the text "CRL 6.51cm" and "GA 12w6d 71.8%".

A blue film strip graphic with white sprocket holes, curving across the frame. Inside the strip, a large collection of colorful digital icons and logos is scattered, including Facebook, WhatsApp, LinkedIn, YouTube, Spotify, IMDb, and many others.

# Digital Footprints



# Digital Shadow

# Digital Trail



# Digital Stamp



**Digital  
Footprint**



**Digital  
Shadow**

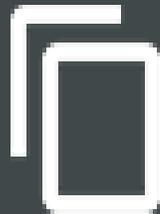


**Digital  
Stamp**



**Digital  
Trail**





# Google

🔍 Your Name



Google Search

I'm Feeling Lucky

Google offered in: हिन्दी बांग्ला ॢलुगु मरुठी त्रुडुडु गुजरुतुी कनुडु डुलुडुडुडु डुनुषुी



Your Name  
Google Search I'm Feeling Lucky

Gmail Images

What is the first thing that comes up?  
Is it you?  
Is it someone else?  
What do you want to come up?



Your Name

Google Search I'm Feeling Lucky

Google offered in: हिन्दी बांग्ला ॳलुगु मरुठी त्रुडुडु गुजुररुती कनुडु डुलरुडुडु डुनुषी



*Weapon*



# Digital Detox

A broken smartphone with a cracked screen lies on a bed of green grass and brown autumn leaves. The phone is positioned diagonally across the frame, with the damage to the screen clearly visible.

A **digital detox** refers to a period of time when a person refrains from using tech devices such as smartphones, televisions, computers, tablets, and social media sites.

Detoxing from digital devices is often seen as a way to focus on real-life social interactions without distractions.

# Digital Fasting

The process of setting periods in your day or your week where you are not using certain forms of technology. Usually, phones, tablets or laptops.

Recharge your mind, body & soul  
with

**DIGITAL FASTING**

May also be known  
by other names like:

“Digital Detox”

“Dopamine Fasting”

“Unplugging from  
Technology”

“Digital Sabbath”

# Digital Empathy



Digital empathy is the cognitive and emotional ability to be reflective and socially responsible while strategically using digital media.

# The ethics of data: care, respect and human dignity in the digital age



A white smartphone is positioned diagonally, leaning against a vertical piece of weathered, greyish-brown wood. The phone's screen is black and displays the words "Digital Quotient" in a white, bold, sans-serif font. The phone is resting on a bed of smooth, rounded stones in various shades of tan, brown, and grey. The background is a soft-focus field of similar stones, creating a natural, textured setting.

**Digital  
Quotient**

# Digital Etiquettes



# Social Media Addiction Symptoms

According to Psychology Today If you want to check whether you may be at risk of developing an addiction to social media, ask yourselves these six questions:

Do you spend a lot of time thinking about social media or planning to use social media?

Do you feel urges to use social media more and more?

Do you use social media to forget about personal problems?

Do you often try to reduce your use of social media without success?

Do you become restless or troubled if you are unable to use social media?

Do you use social media so much that it has harmed your job or studies?

# Digital Wellbeing



# Digital Wellbeing

Digital Wellbeing is about crafting and maintaining a healthy relationship with technology.

It's about how technology serves us and moves us towards our goals, rather than distracting us, interrupting us or getting in the way.

Being in control of technology enables us to use its full potential and gain all the benefits of it.



# Digital Wellbeing

Digital wellbeing is a term used to describe the impact of technologies and digital services on people's mental, physical, social and emotional health.



# Digital Wellbeing

A close-up photograph of a person's hands holding a silver smartphone. The person is wearing a dark suit jacket with red diagonal stripes on the sleeve, a silver metal watch, and a silver ring. The background is a blurred outdoor scene with green foliage and a bright light source, possibly the sun.

New ways to find balance for  
you and your family.

Learn how to develop and  
maintain healthy tech  
habits.



## Digital Guidelines

- **Fix Screen Time**
- **Keep important tools in home**

## Physical Guidelines

- **Stay outside**
- **Keep mobile away from you**

# Device free meeting



Two smartphones are shown on a light-colored, textured fabric surface. The phone in the foreground is tilted towards the viewer. Its screen displays a wood-grain texture with a dark, recessed door handle in the center. Overlaid on the screen is the text "Different Device for Personal Life" in a white, serif font, slanted upwards. The phone in the background is similar but its screen is not visible. The background is slightly out of focus, showing a window with greenery outside.

*Different Device  
for Personal Life*

# Face to Face Conversation



# Schedule your Screen time



# Switch off Devices



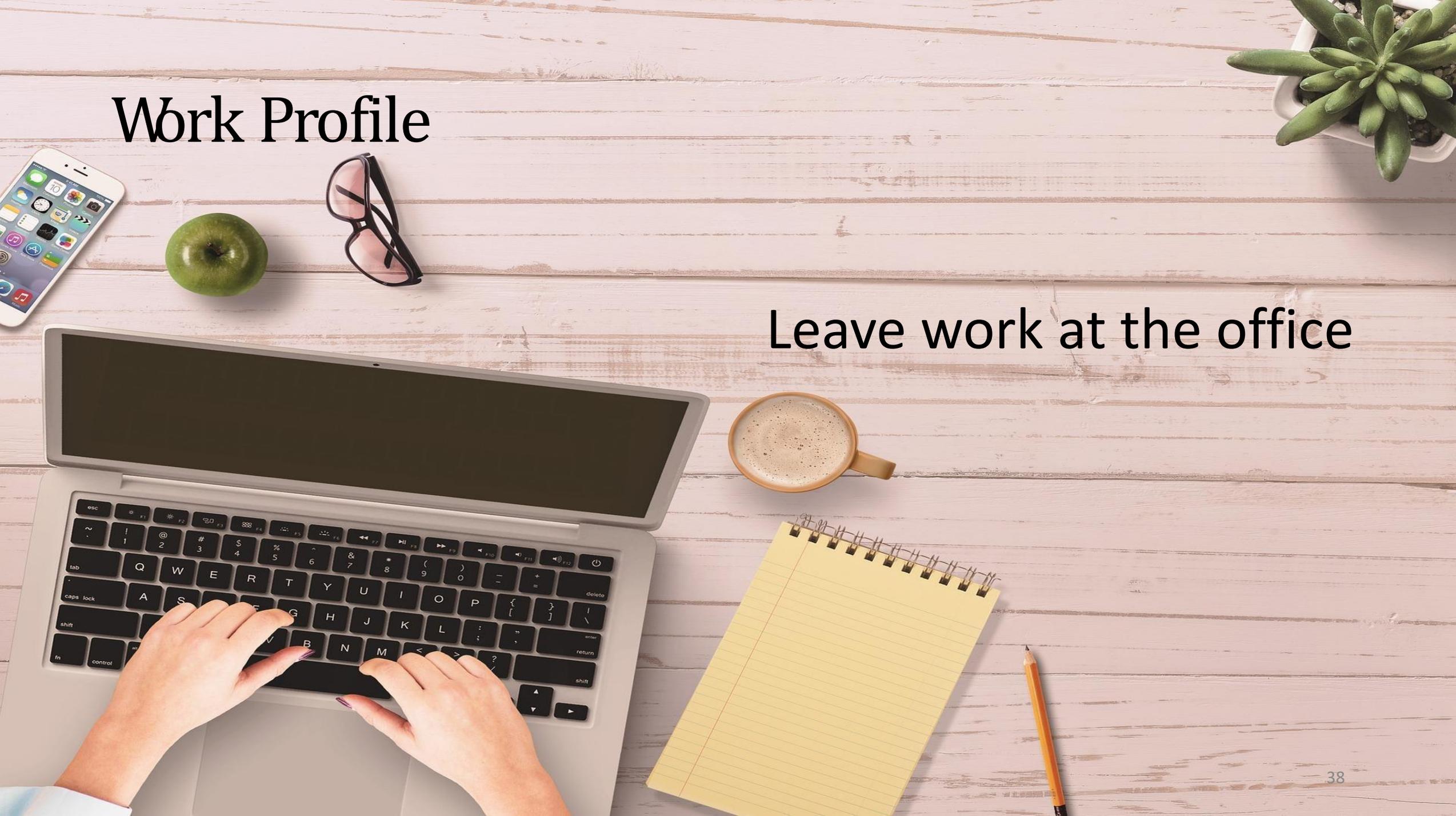
# Bedtime Mode

Disconnect for a  
better night's Sleep



# Work Profile

Leave work at the office



# Flip to Shhh

Turn it over to turn off interruptions



# Focus Mode



Focus on what's in front of you

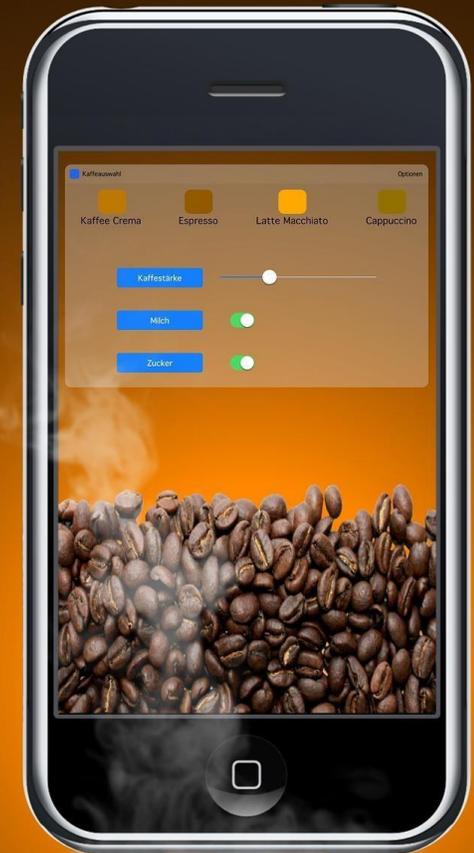
# Dashboard

See everything in one place



# App Timers

Set boundaries that you can keep





Manage their apps

Guide them to good content

Set limits

Keep an eye on screen time



- <https://experiments.withgoogle.com/collection/digitalwellbeing>
- <https://uxdesign.cc/digital-wellbeing-more-than-just-reducing-screen-time-46223db9f057>
- <https://www.slideshare.net/IISC/exploring-digital-wellbeing>

# Digital Wellbeing



# FINAL THOUGHTS



# Digital Healthy Practice

# Digital Privacy

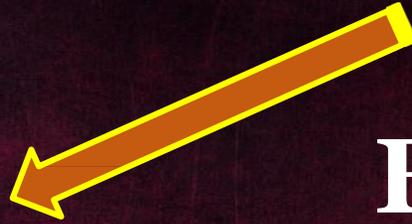




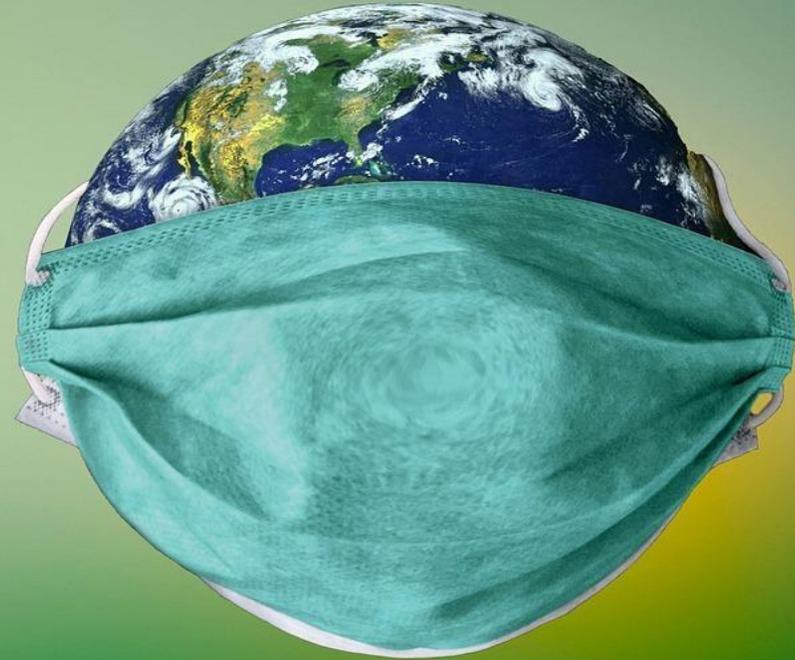
# Wealthy Digital Decorum



**We all  
are  
Expecting**



**Have Safe  
and  
Happy Life**





Schlafzimmer

Neue Szene

Color wheel interface

Smart lighting app interface showing a color wheel and navigation icons.

Balance Technology  
With Mindfulness  
&  
Mindfulness with  
Technology





Are You  
Mindful  

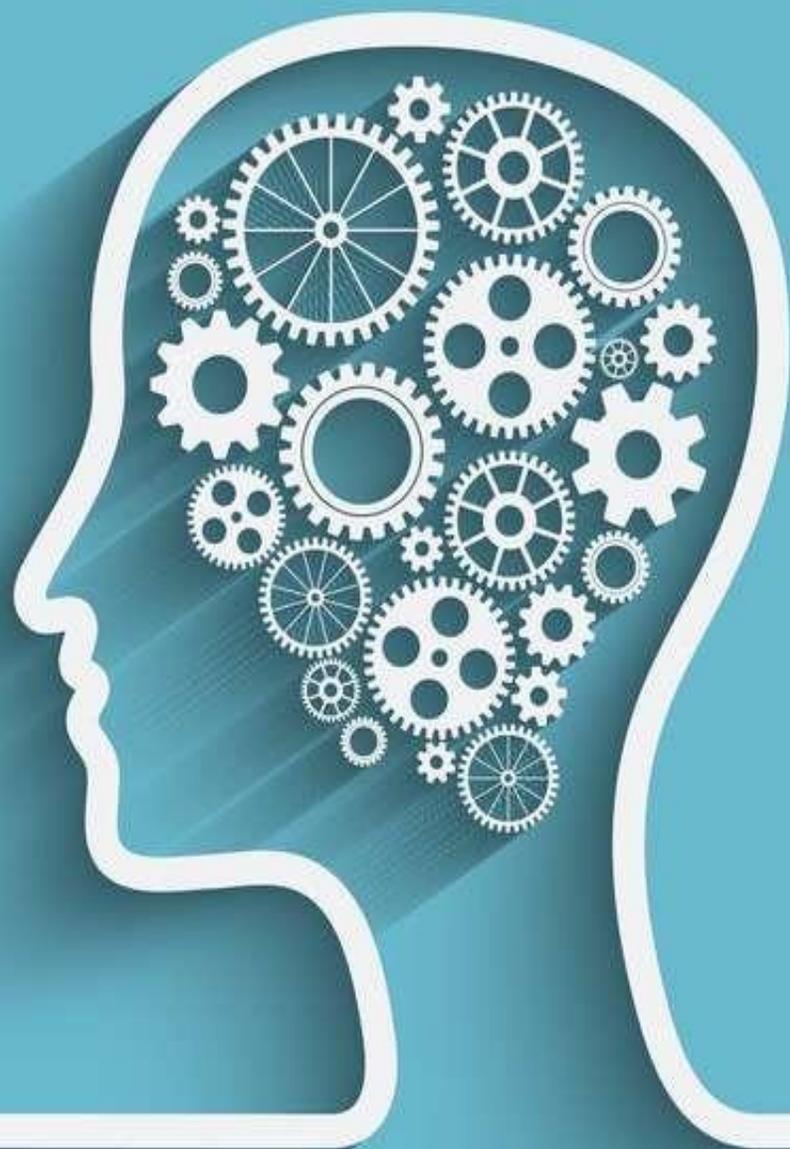
---

or  
Mind Full?





Mindful

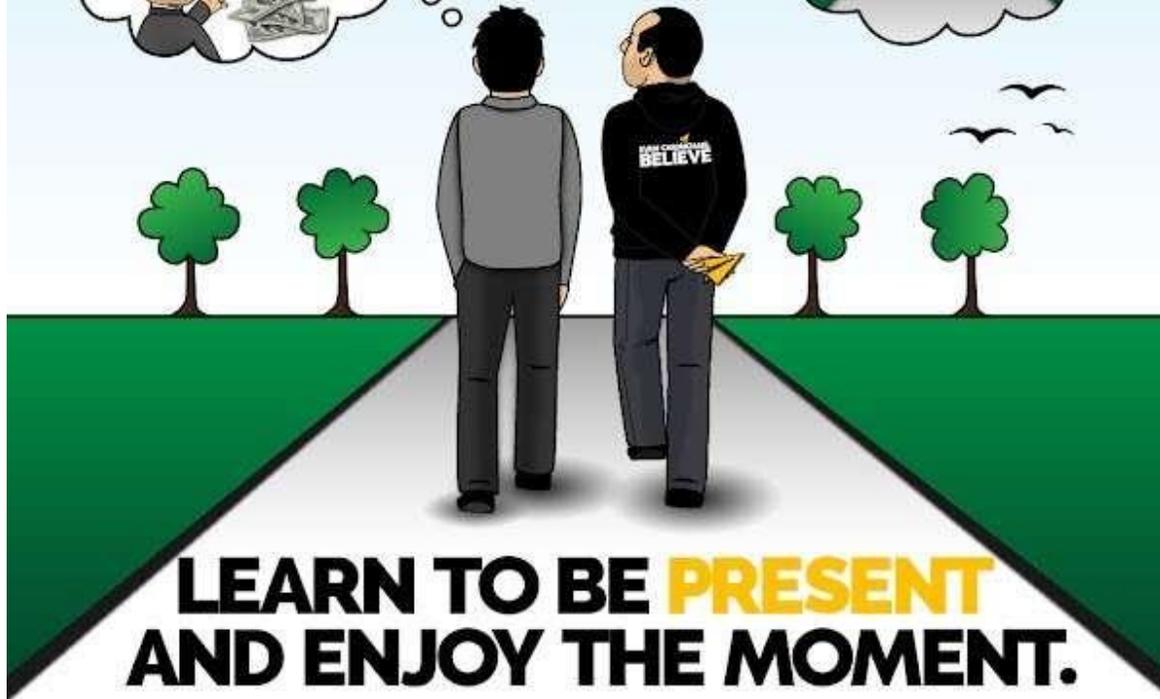
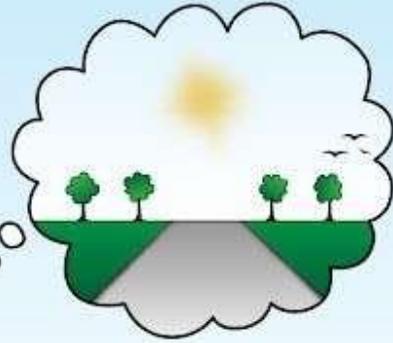


Mind Full

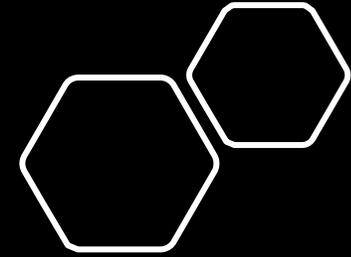
**MIND FULL**

**VS**

**MINDFUL**



**LEARN TO BE PRESENT  
AND ENJOY THE MOMENT.**





# Multiple Screens and Multitasking

---

Are this habits Good?



---

## *We Believe.....*

---

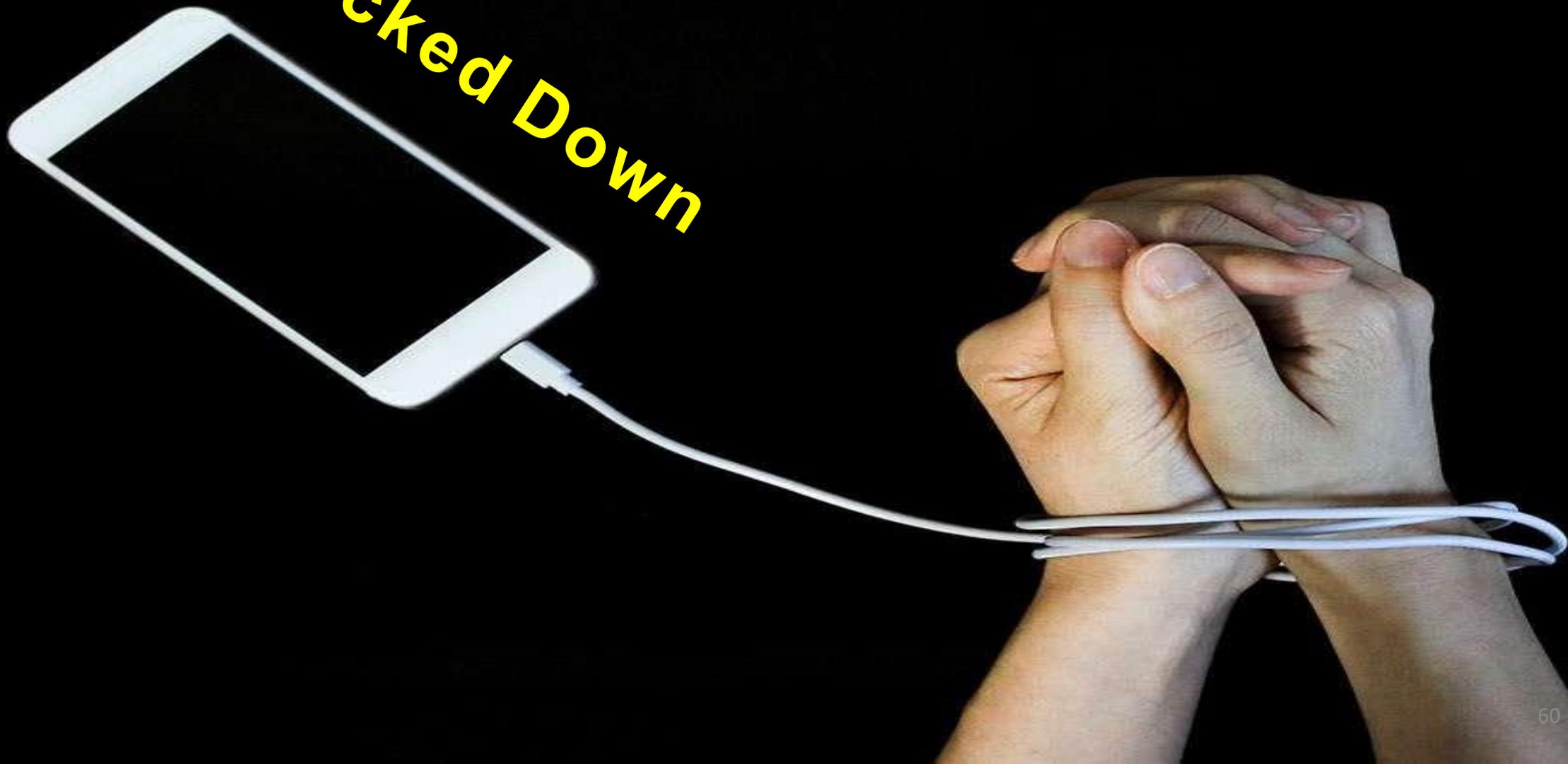
Technology  
increases the idea  
therefore  
we should multitask



# Mobile Glucose



**Locked Down**



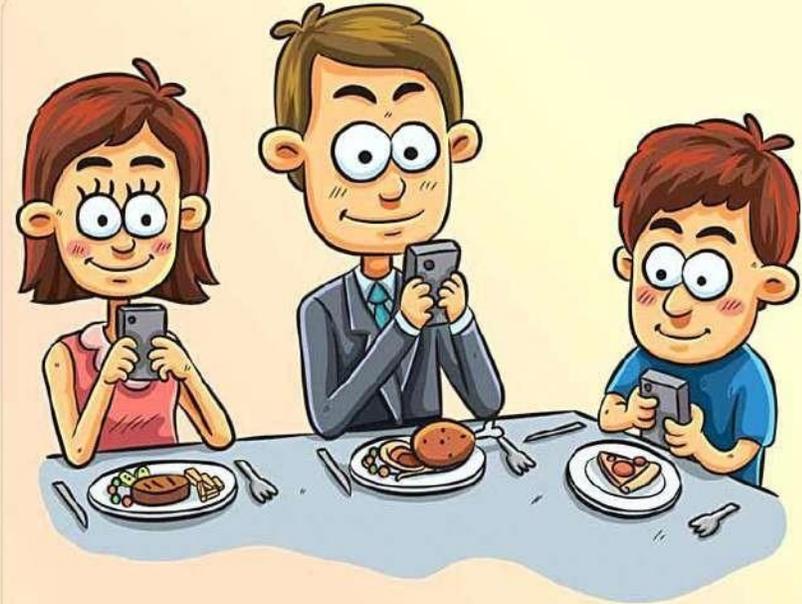




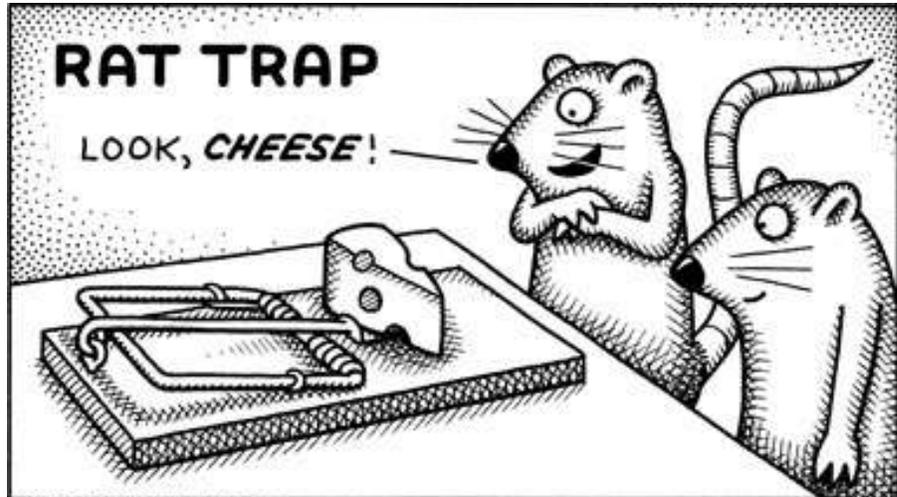
# INTERNET ADDICTION

Give a person a fish and they eat for a day; Give that person the internet and they won't bother you for weeks.

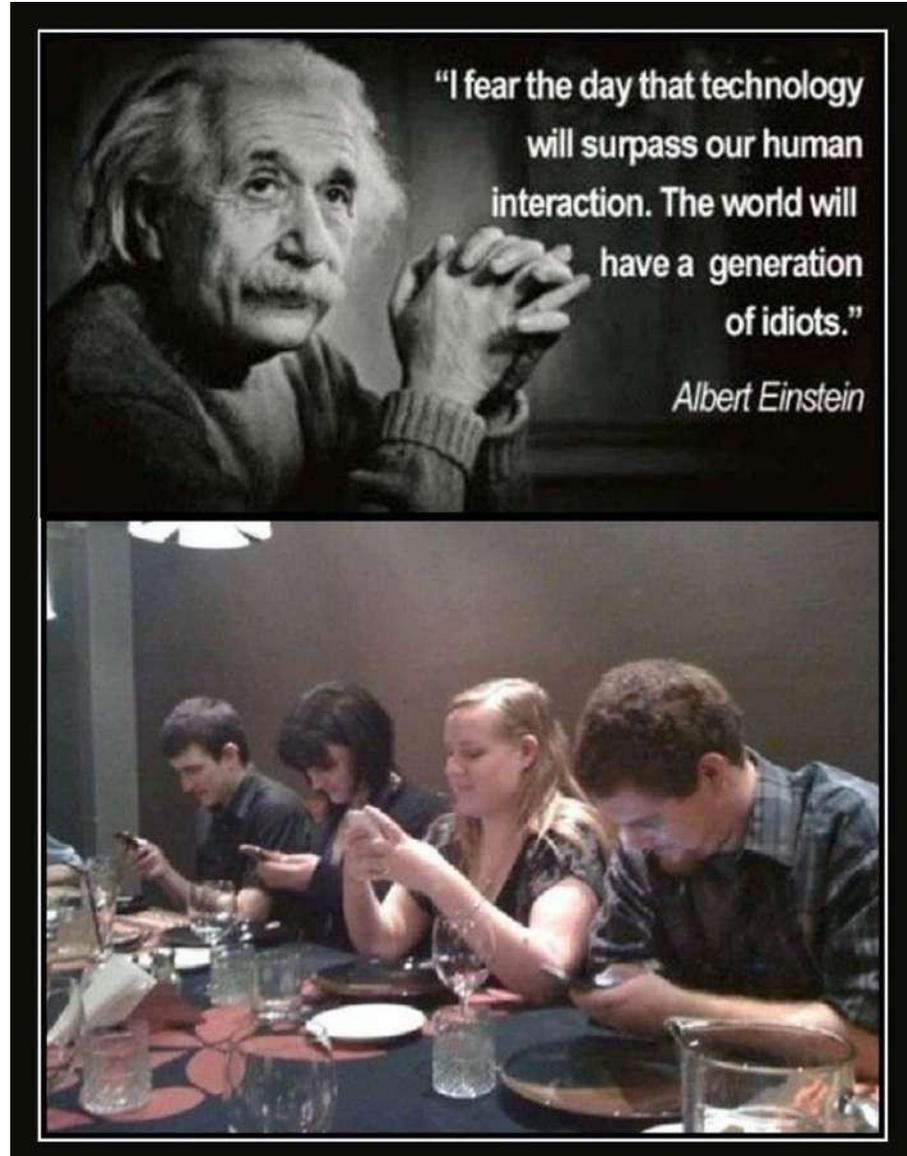
[motifakc.com](http://motifakc.com)



**CELL PHONES BRING YOU  
CLOSER TO PERSON FAR  
FROM YOU. BUT IT TAKES  
YOU AWAY FROM THE  
ONES SITTING NEXT TO YOU!**



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phone: 216.371.8600 / email: ft@funnytimes.com





# LIFE WITHOUT INTERNET



[www.whatsappjokes.co.in](http://www.whatsappjokes.co.in)



[/InWhatsappjokes](https://www.facebook.com/InWhatsappjokes)



[/InWhatsappjokes](https://twitter.com/InWhatsappjokes)



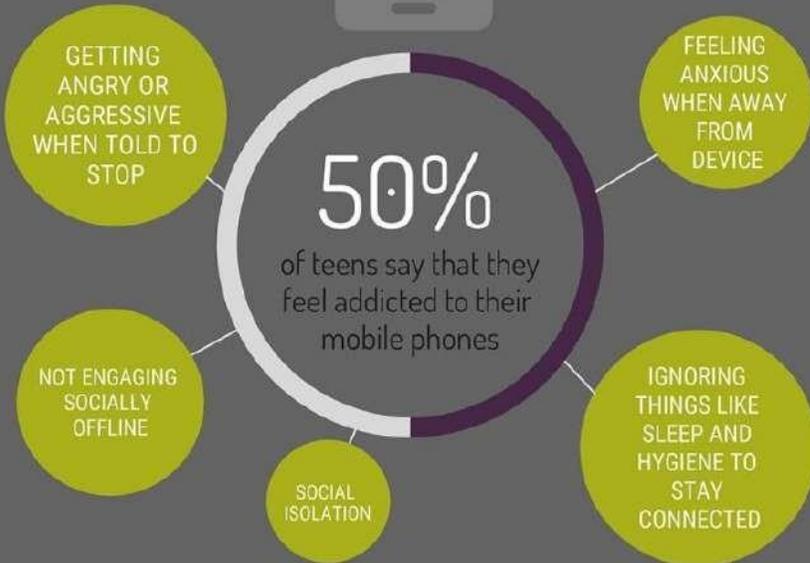
[/inwhatsappjokes](https://www.instagram.com/inwhatsappjokes)

***The only relationship I  
have is with my **Wifi**.  
We have a connection.***



# TECHNOLOGY ADDICTION

## Behaviors and Warning Signs



Often, what appear as technology addictions are actually coping mechanisms for other mental health issues. Getting appropriate treatment for the underlying conditions like ADHD or depression can help alleviate issues associated with technology addiction. Talk to your doctor today if you think your child is suffering from a technology addiction.



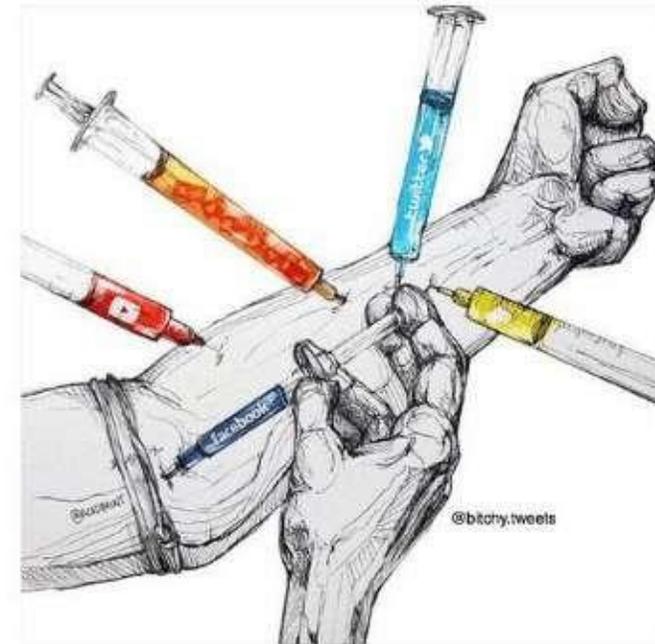
Asheville Academy for Girls is a therapeutic boarding school for girls ages 10-14 struggling with a variety of social and emotional issues.

Learn more at [ashevilleacademy.com](http://ashevilleacademy.com) or call us at (800) 264-8709.

### Sources:

- <https://childmind.org/article/is-internet-addiction-real/>
- <https://www.common-sense-media.org/technology-addiction-concern-controversy-and-finding-balance-infographic>

my internet addiction be like



amazin drawing by @acidpaint



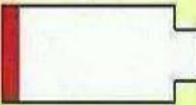
 = 5 min

 +  = 15 min

 +  +  = 55 min

 +  +  +  = ∞

### 3 BIGGEST FEARS OF OUR GENERATION

- 
- 
- 

# Mobile Kills.... Our Time



# Facts are .....



Multitasking has been shown time and time again to decrease efficiency, focus, and clarity of mind.

It can even decrease IQ points by reducing the density of the brain's grey matter – the region that deals with emotional balance and cognition.



Better Solution .....

---

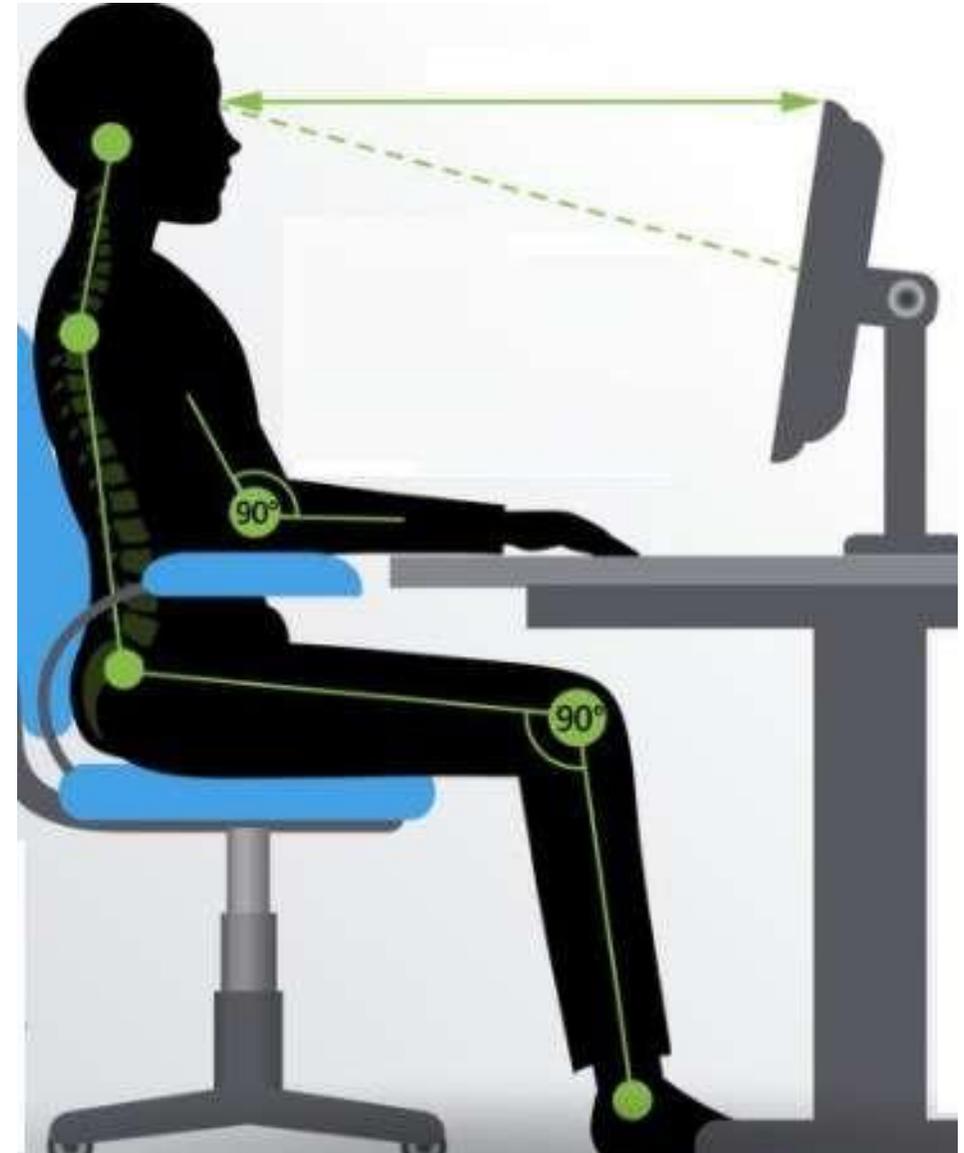
Start **single-tasking**  
by setting times  
for  
particular activities,  
whether work  
or  
pleasure.

# Ways to use mindfulness while using tech gadgets



# Be mindful of posture

- The idea here is to remind ourselves periodically to be mindful of our posture when using the tech gadgets, be it TV, mobile or a laptop. While using a laptop, this could include having a straight back, eyes, hands and fingers at the recommended angles.



# Be mindful of breathing:

We can set ourselves occasional reminders to breathe more slowly and deeply. slow and deep breathing is good for our health and for relaxation, while shallow and faster breathing are signs of stress.



# Be mindful of taking short breaks:

Short breaks (say once an hour) are vital when using tech. We should remind ourselves to take a short walk, maybe get a cup of tea or glass of water, once every hour at least. That is useful for reducing strain on our eyes, besides others.





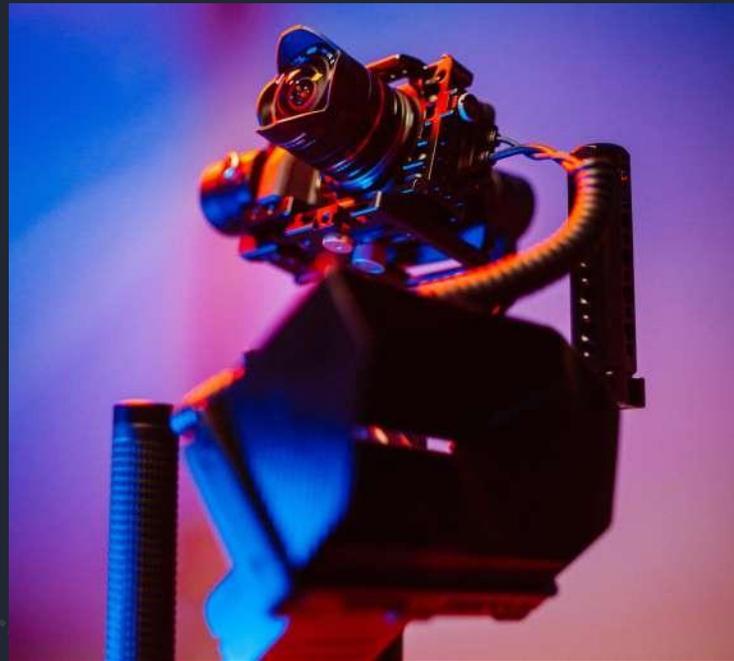
# Be mindful of the state of our mind when consuming content using tech

Sometimes we tend to get carried away and get too absorbed in the work we are doing when using tech. It may be helpful here to be mindful of our thoughts from time to time, also to be mindful of what content (such as news or social media feeds) we are consuming.

# Be mindful on how we interact with others using tech

Often we are on autopilot and have no time to look back and be mindful of how we interact with others or what is the impact on our minds when we are receiving, creating or interacting with online content. We may for example, send off an angry email or reply to a social media post in a rude way, something we may regret later. So it might be worthwhile to consider how our content will affect other people and be mindful of their feelings too.





## Ways to use technology to enhance our mindfulness

- Using mindfulness apps to meditate
- Using the mindfulness bell
- Using creativity enhancing apps
- Mindfulness enhancing games
- Using gadgets and wearables to be mindful
- Setting reminders to be mindful
- Listening to mindfulness sounds and music



Augmented Reality (AR)

Virtual Reality (VR)

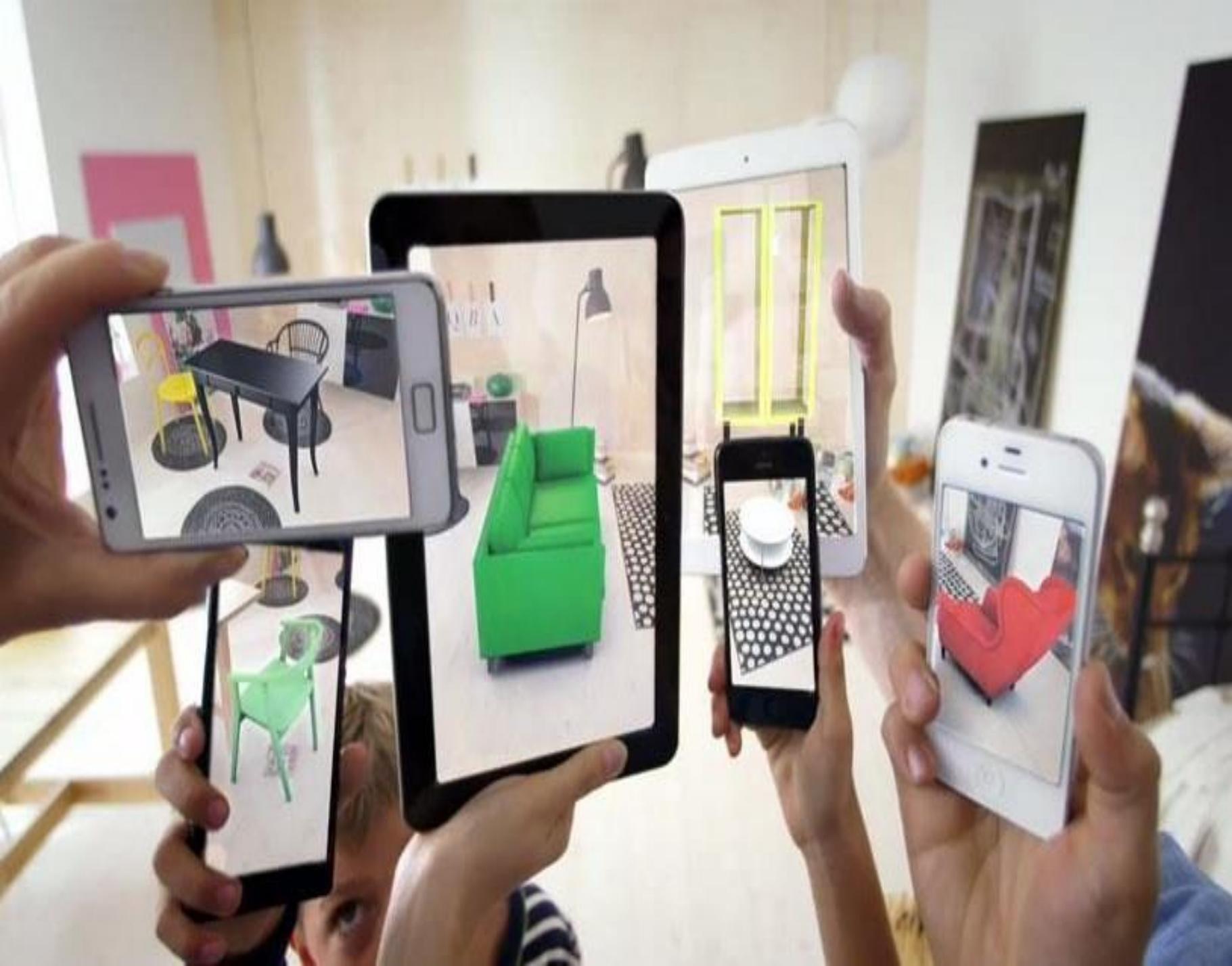
Mixed Reality (MR)

Google



**Technology  
is  
Not the Enemy**

**Instead,  
It's  
a  
Tremendous Gift.**



AR

Business





AR

Airforce  
Training



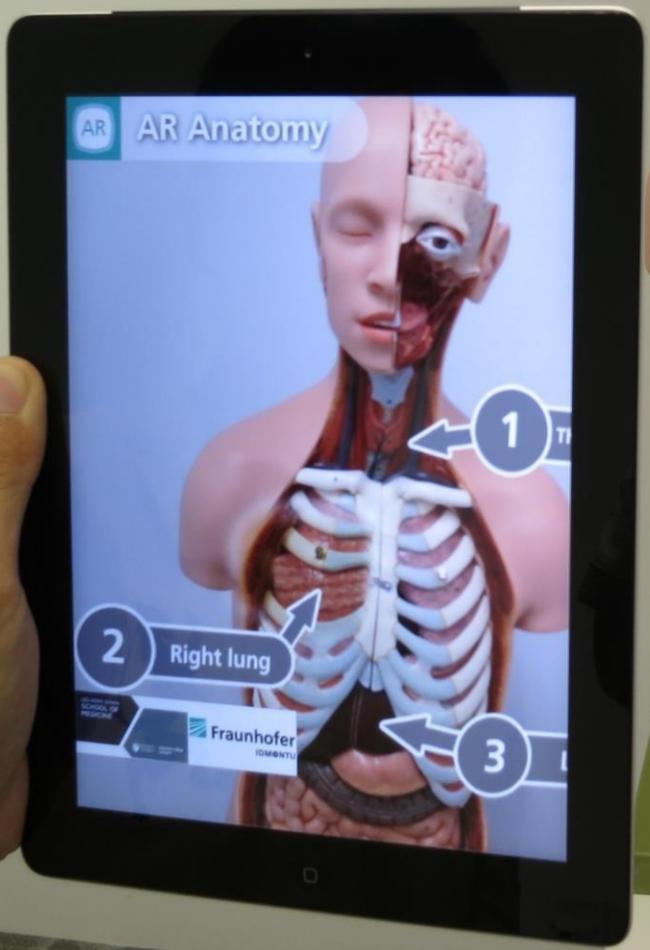


AR

Fashion Design



AR



Education



AR



Civil /  
Constructions



AR



Game

**Augmented Reality  
virtual reality's  
Little Brother.**



**It is a  
halfway point  
between  
the real world  
and  
Virtual  
Environments.**

**In augmented  
reality simulations,  
the real world is  
infused with virtual  
objects, and  
provides an  
interactive  
experience.**

Augmented Reality  
is the  
result of using technology  
to  
superimpose information  
(sounds, images and text)  
on  
the world we see.



Augmented reality  
is the technology that  
expands our  
physical world,  
adding layers of  
digital information  
onto it.

AR appears in direct view of an existing environment and  
adds sounds, videos, graphics to it.

Augmented Reality  
is the blending of  
interactive digital elements  
(dazzling visual overlays, or other  
sensory projections)  
into  
our real-world environments.





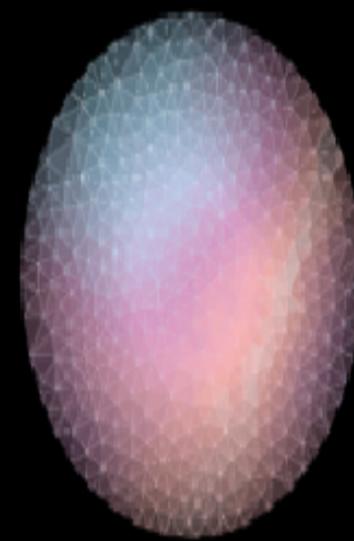
Augmented Reality turns the environment around us into a digital interface by placing virtual objects in the real world, in real-time.

Augmented reality  
(AR)  
is a view of the real,  
physical world  
in which users  
find elements  
enhanced  
by  
computer-generated  
input.



PHYSICAL WORLD

DIGITAL WORLD



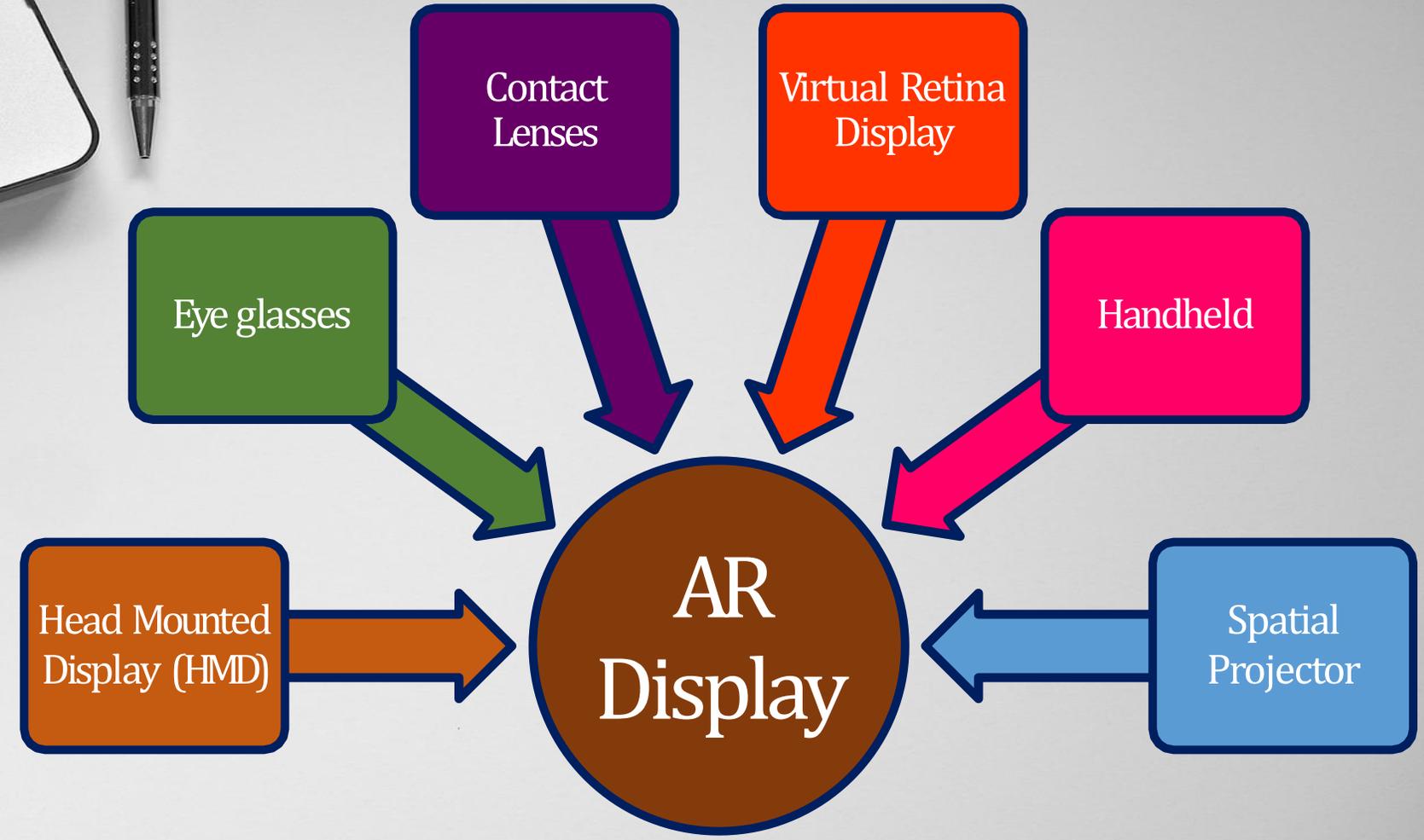
AUGMENTED REALITY

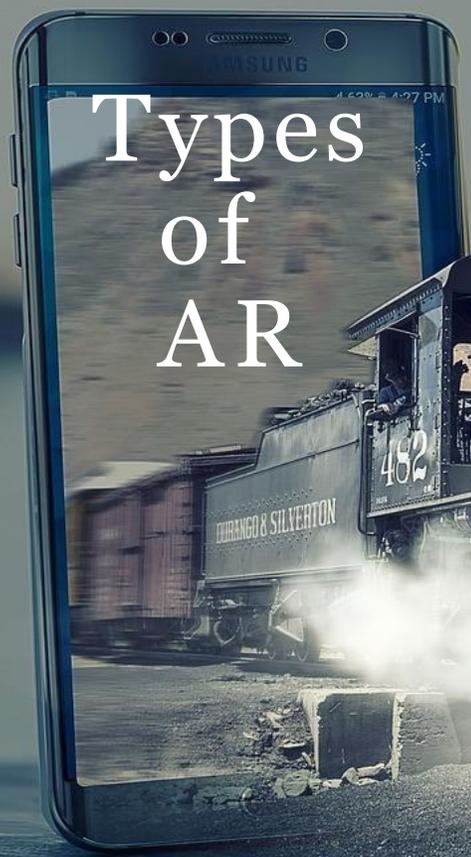
VIRTUAL REALITY

MIXED REALITY SPECTRUM

# How AR works ??

- **Pick a real world scene**
- **Add our virtual objects in it**
- **Delete real world objects**
- **Not virtual reality since environmental real**





# Types of AR



# Marker-based AR



The other name for Marker-Based AR is also called Image Recognition or Recognition based AR. this type of AR provides us more information about the object after it focuses on the recognition of objects.

# Markerless AR

Marker-less AR is more versatile than marker-based AR as it allows the user to **decide where to put the virtual object**. You can try different styles and locations completely digitally, without having to move anything in your surroundings.

Markerless augmented reality relies on the device's hardware, including the camera, GPS, digital compass, and accelerometer, to gather the information necessary for the AR software to do its job.

# Location-based AR

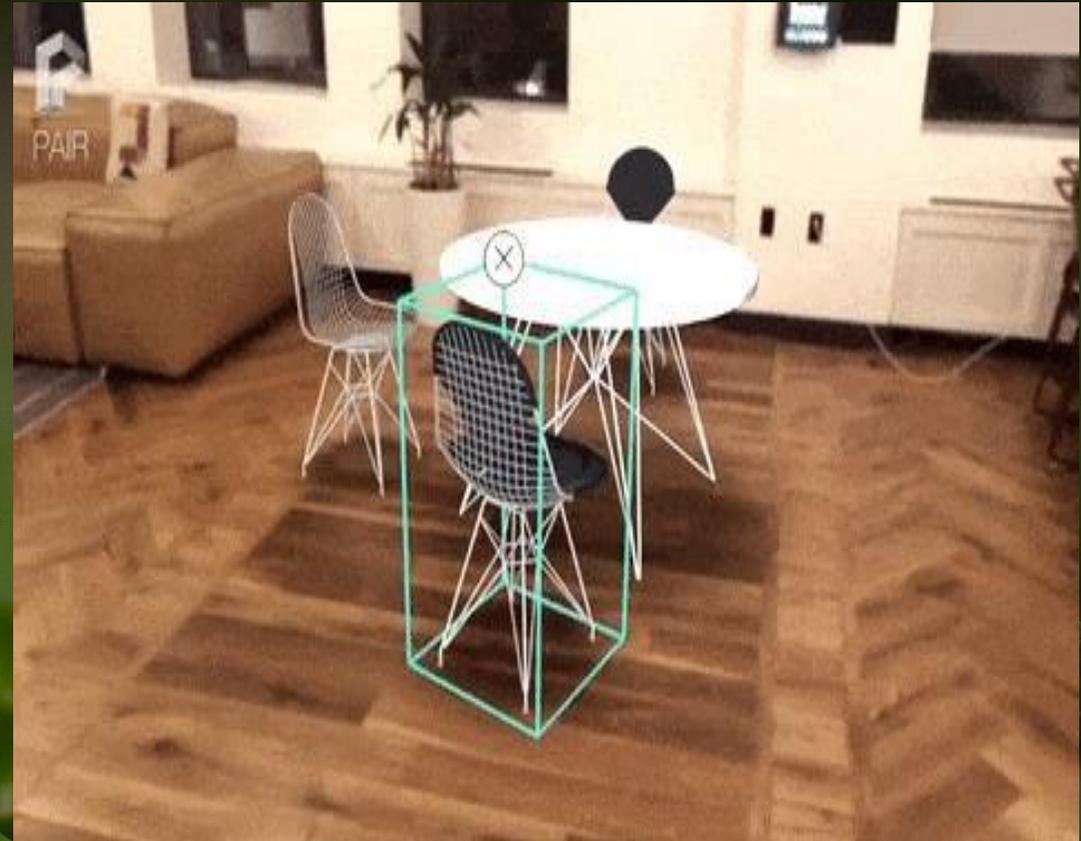
Location-based AR ties digital content and the experience it creates to a specific place. The objects are mapped out so that when a user's location matches the predetermined spot it is displayed on the screen.



# Superimposition AR

Superimposition AR recognizes an object in the physical world and enhances it in some way to provide an alternate view. This can include recreating a portion of the object or the whole thing in its entirety.

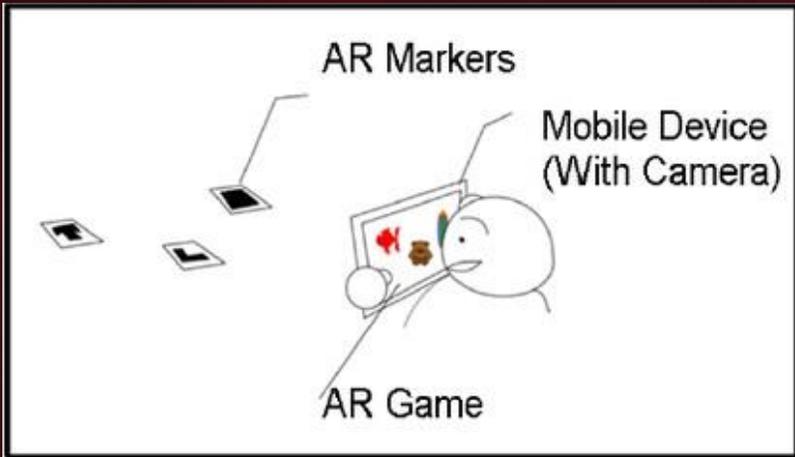
In this example, the chair is copied, rotated, and placed in another location around the table. The user can do so many things with this technology, like decide if they want to have four chairs and a little elbow room or if they can comfortably seat six at the same table.



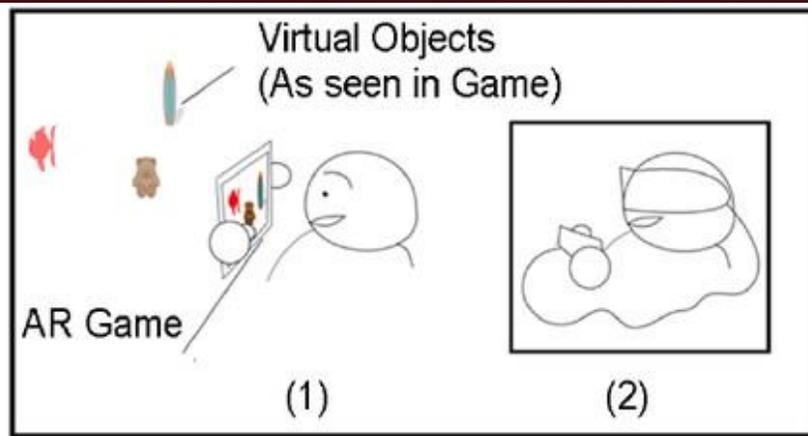
# Projection-based AR



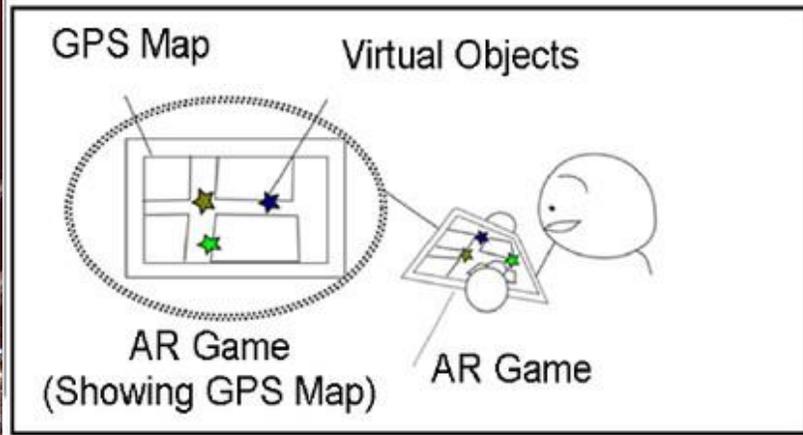
Projection-based AR is a little different than the other types of markerless augmented reality. Namely, you don't need a mobile device to display the content. Instead, light projects the digital graphics onto an object or surface to create an interactive experience for the user.



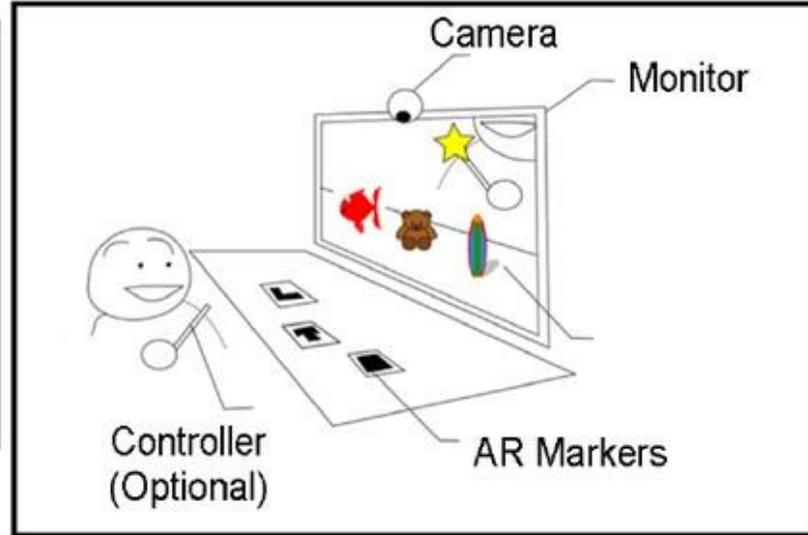
(1) Marker-Based Mobile



(2) Accelerometer/Gyroscope Tracked



(3) GPS-Tracked

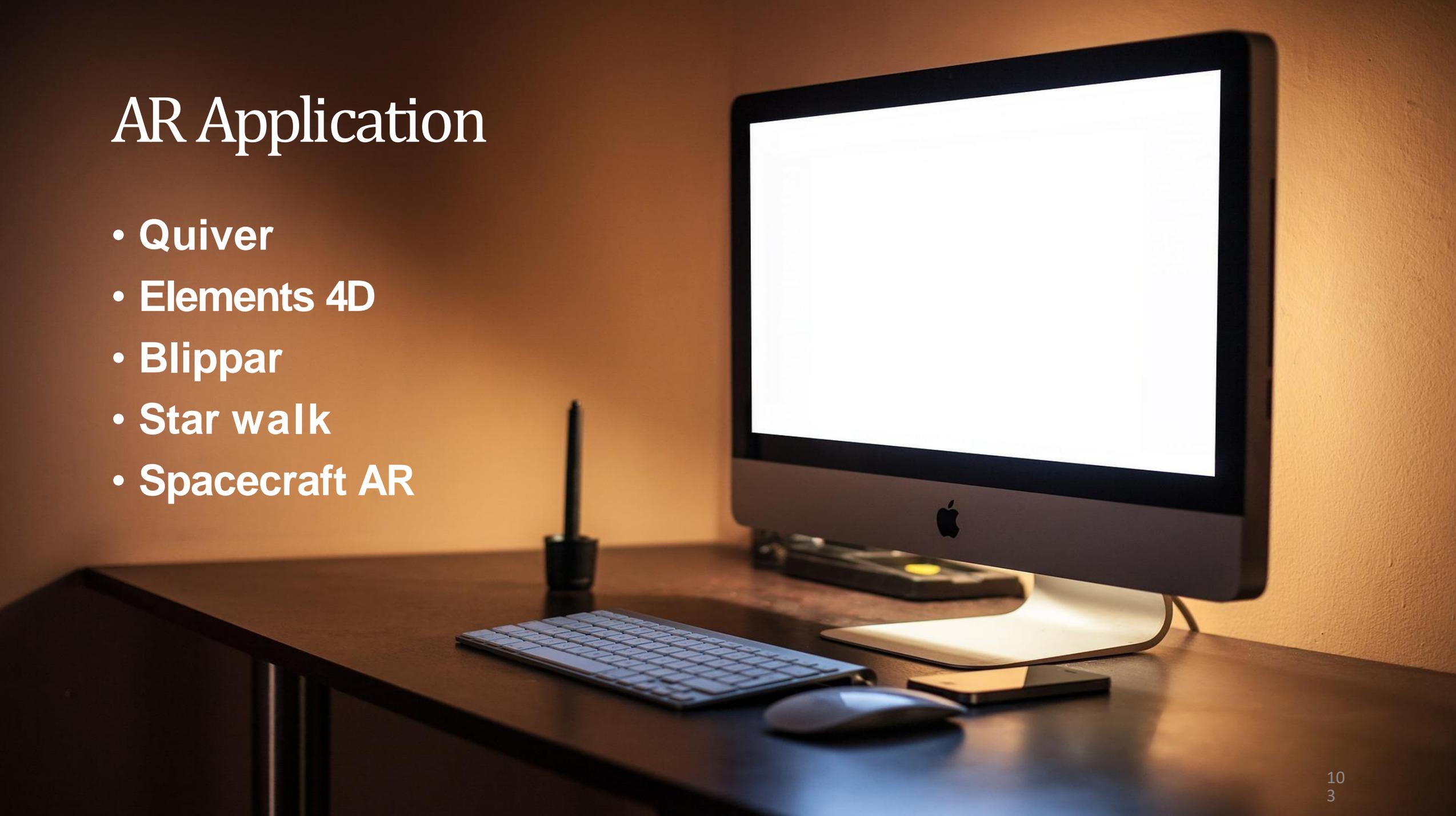


(4) Spatial



# AR Application

- **Quiver**
- **Elements 4D**
- **Blippar**
- **Star walk**
- **Spacecraft AR**



# AR Games

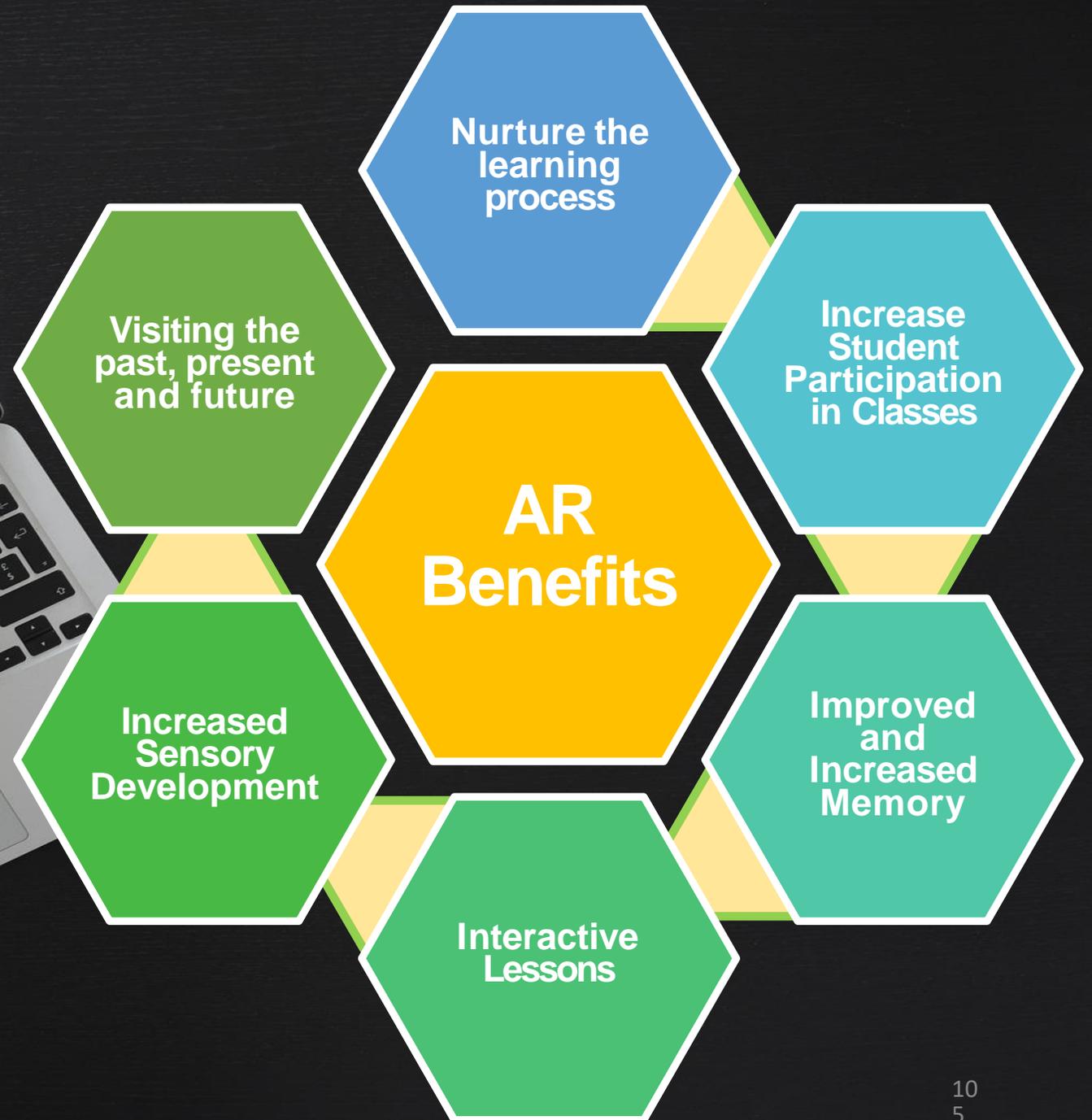


Pokemon Go  
Ingress

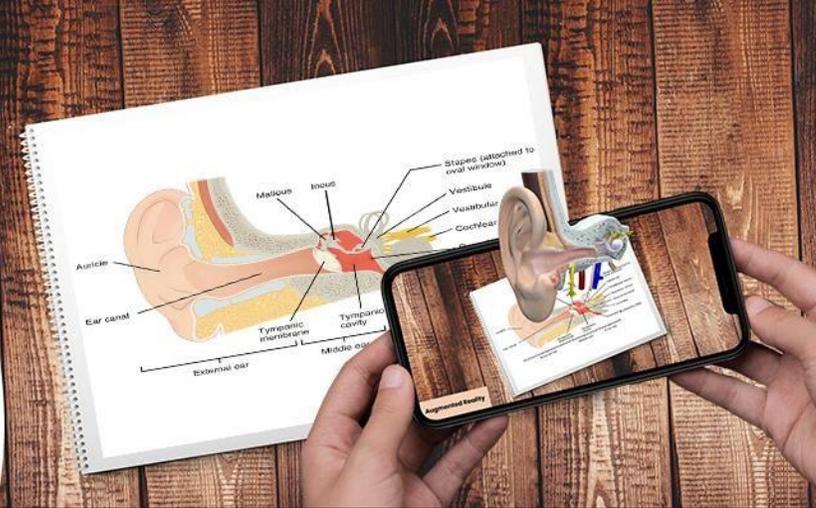
Zombies, Run!

Harry Potter:  
Wizards Unite

Spirit Camera



# Augmented Reality in Education



- Increased content understanding
- Learning arrangement function
- Learning language institutions
- Long-term memory retention
- Improved activity performance
- Improved collaboration
- Increased pupil motivation



**Virtual Reality  
(VR)**  
is the use of  
computer technology  
to  
create a  
simulated environment.



Virtual Reality  
is a  
simulated experience  
that can be  
similar to  
or  
completely different  
from the  
real world.

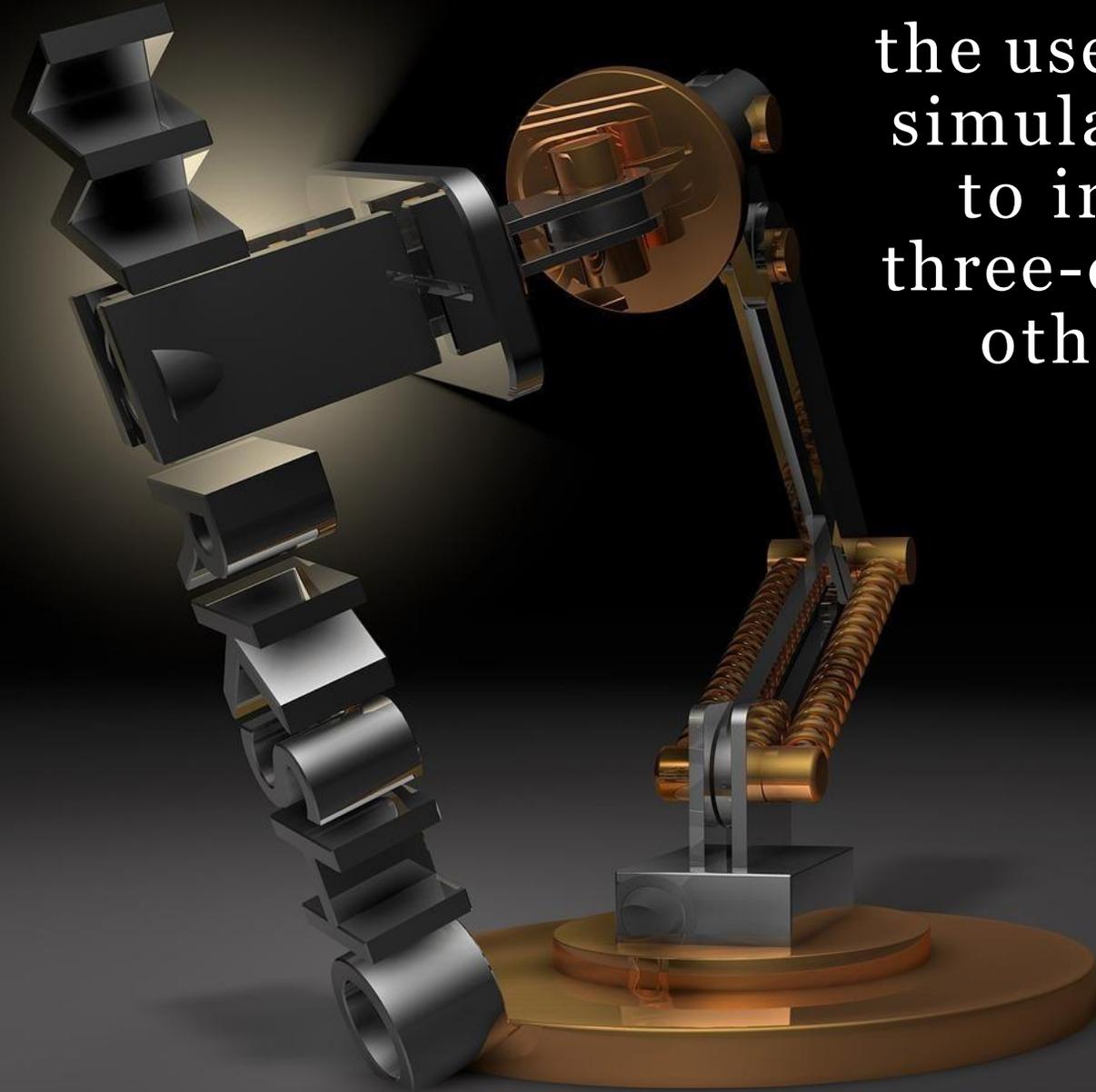


Virtual reality is the creation of a virtual environment presented to our senses in such a way that we experience it as if we were really there.





VR applications immerse the user in a computer-generated environment that simulates reality through the use of interactive devices, which send and receive information and are worn as goggles, headsets, gloves, or body suits.



**Virtual Reality (VR),**  
the use of computer modeling and  
simulation that enables a person  
to interact with an artificial  
three-dimensional (3-D) visual or  
other sensory environment.



The term **Virtual Reality** is built on the natural combination of two words:  
**Virtual and Reality.**

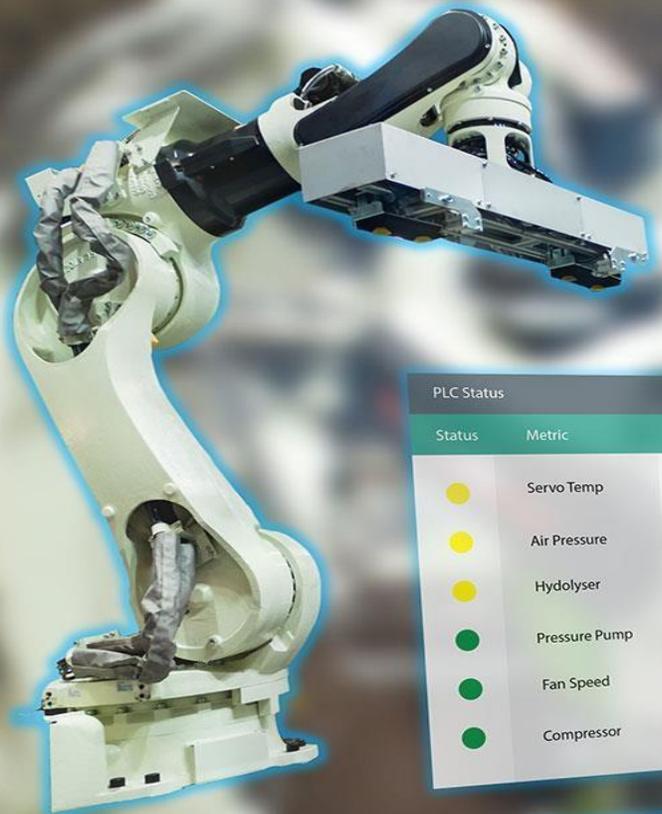
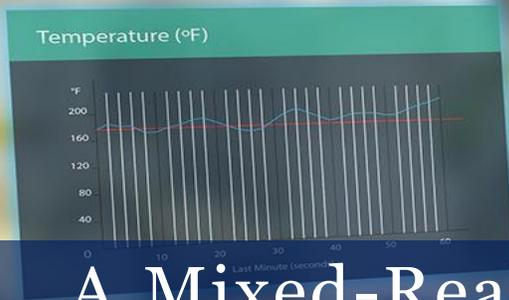


The former means “nearly” or “conceptually,”  
which leads to the concept indicating an experience that is **near-reality.**





**Mixed Reality (MR)** is the merging of real and **virtual** worlds to produce new environments and visualizations, where **physical and digital objects co-exist and interact in real time.**



PLC Status		All
Status	Metric	Value
●	Servo Temp	220 °F
●	Air Pressure	285 PSI
●	Hydolyser	11%
●	Pressure Pump	2915 PSI
●	Fan Speed	1300 RPM
●	Compressor	4450 PSI



A Mixed-Reality environment goes a step beyond augmented reality because users can interact in real-time with virtual objects that are placed within the real world.

These virtual items will respond and react to users as if they were actual objects.

Mixed Reality is a blend of physical and virtual worlds that includes both real and computer-generated objects.



The two worlds are "mixed" together to create a realistic environment.

A user can navigate this environment and interact with both real and virtual objects.



The term mixed reality was coined by Microsoft when they launched the Microsoft HoloLens in 2016.

Apart from being head mounted mixed reality also stands out from augmented reality through a more advanced understanding of the physical space and ability to place holograms in that space.



**Mixed Reality** allows us to see and immerse ourselves in the world around us even as we interact with a virtual environment using our own hands—all without ever removing our headset.

# What is Education 4.0?



**Anywhere Anytime**



**Personal**



**Flexible Delivery**



**Peers and Mentors**



**Why/Where not What/How**



**Practical Application**



**Modular and Projects**



**Student Ownership**



**Evaluated not Examined**