

Project Title: DIGITAL ARMONY

LTTA1 in Reunion

31 Aug. 2025/5 Sept. 2025

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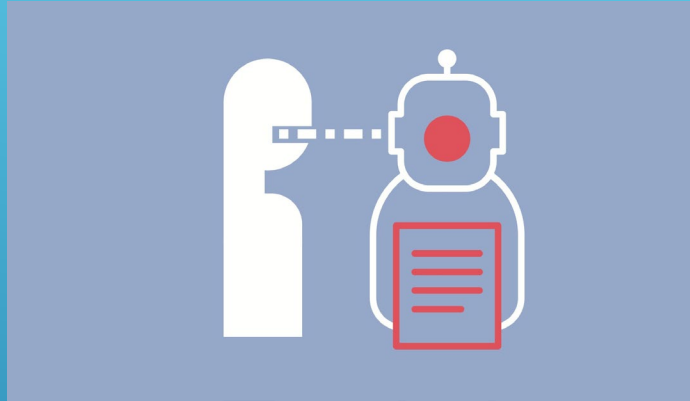
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Co-funded by the
 Erasmus+ Programme
 of the European Union

DIGITAL HARMONY TOOLKIT (DHT)

- A project integrating digital sustainability, mental health, and active citizenship
- Educational resources: theoretical frameworks, multimedia materials, a replicable toolkit
- Goal: developing critical skills for living and working in the digital world in a healthy and responsible way



PRESENTATION MAP

The six theoretical modules

- **Area A:** Sustainable technologies, Green Economy, Skills for the future
- **Area B:** Neuroscience of social media, Digital identity, Health apps
- Common thread: conscious technology use and its impact on individuals, communities, and the environment



WHAT “DIGITAL SUSTAINABILITY” MEANS

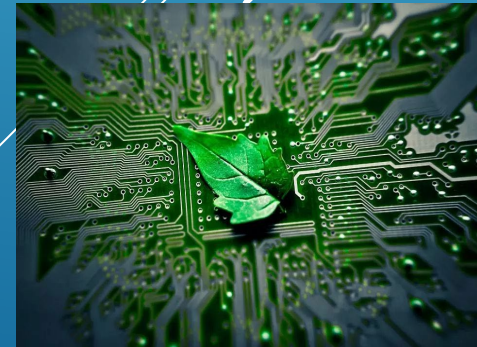
Key concept

- Environmental footprint of the digital ecosystem (devices, networks, cloud, data)
- Balancing innovation, efficiency, and planetary limits
- A systemic perspective: life cycle, consumption, and user choices



LESSON 1: SUSTAINABLE TECHNOLOGIES (THEORETICAL OVERVIEW)

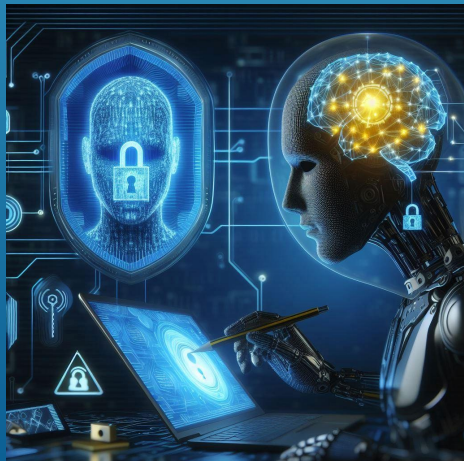
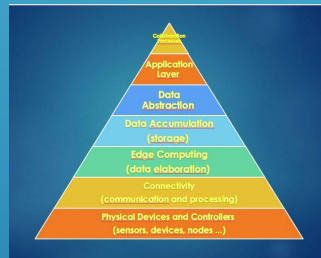
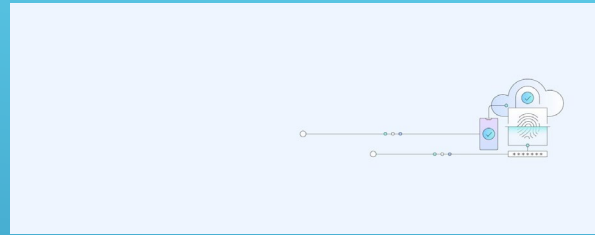
- ▶ **Sustainable Technologies in Everyday Life**
- ▶ • Definition: technologies designed to reduce resource use, emissions, and waste
- ▶ • Applications: home, mobility, work, public services
- ▶ • Role of digital skills in green careers



THE DIGITAL FOOTPRINT: THREE LEVELS

Device – Network – Cloud

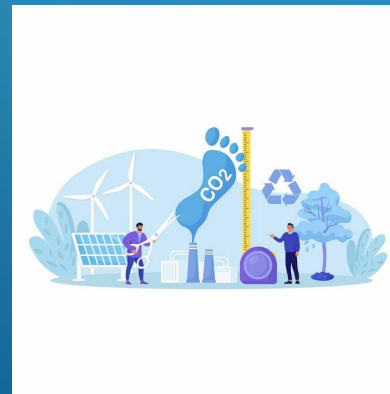
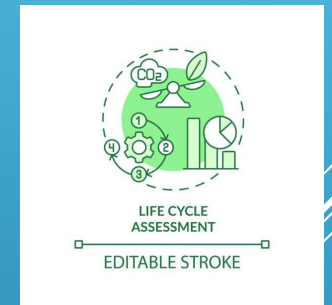
- Production and end-of-life of devices
- Data transmission and network infrastructures
- Data centers, storage, processing, and efficiency



LIFE CYCLE AND THE “LCA” PRINCIPLE

Life Cycle Thinking

- Design → production → use → disposal/recycling
- Key hotspots: energy during use, critical raw materials, server cooling
- Design strategies to lower impact (durability, repairability, modularity)



THE INTERNET OF THINGS (IOT) IN A SUSTAINABLE PERSPECTIVE

Definition and logic

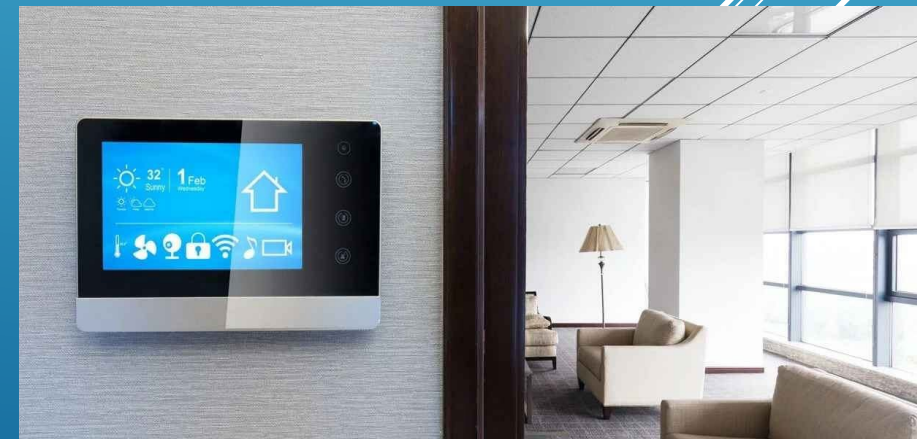
- Sensors + connectivity + automation = smarter consumption management
- From measurement to optimization (real-time feedback)
- Risks: rebound effect, security, privacy, obsolescence



SMART HOMES: THEORETICAL PRINCIPLES

Efficiency and autonomy

- Smart thermostats, lighting, load management
- Algorithms that learn habits and optimize accordingly
- Interoperability, standards, and protocol security



DIGITAL AND SUSTAINABLE MOBILITY

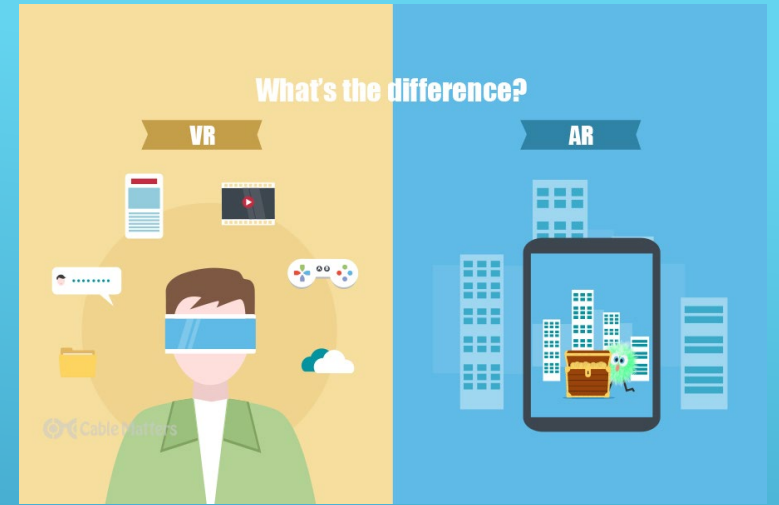
From data to decision-making

- Apps for sharing vehicles, planning routes, cutting wasted time
- Real-time data and intelligent transport systems (ITS)
- Trade-offs between convenience, cost, environmental impact, and inclusion



VIRTUAL AND AUGMENTED REALITY: WHAT IT MATTERS

- ▶ Understanding complex systems
- ▶ VR/AR as tools for visualizing impact and simulating scenarios
- ▶ Experiential learning: how perceptions of efficiency changes
- ▶ Limits : content quality, accessibility, cyber-sickness



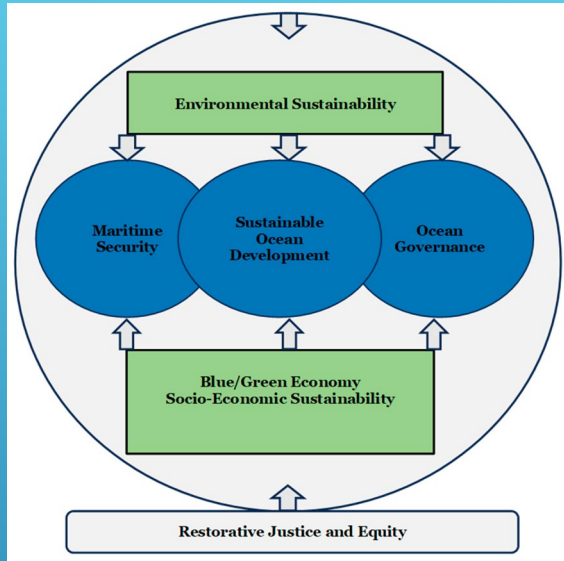
SKILLS FOR “GREEN CAREERS”

Sustainable digital literacy

- Reading energy data, configuring smart systems, evaluating impacts
- Interdisciplinary problem-solving (tech + environment + ethics)
- Communicating benefits and managing change



LESSON 2: THE GREEN ECONOMY (THEORETICAL FRAMEWORK)



What the Green Economy Is

- An economy that grows by regenerating natural capital and cutting emissions
 - Shift from “linear” to circular (reduce, reuse, recycle, redesign)
- Convergence of technological innovation and social value



THE PILLARS OF TRANSITION

Energy, materials, business models

- Renewables, efficiency, electrification
- Recycled materials and design for disassembly
- Servitization (from product to service), sharing platforms



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Green Entrepreneurship (Theory)

What defines a sustainable startup

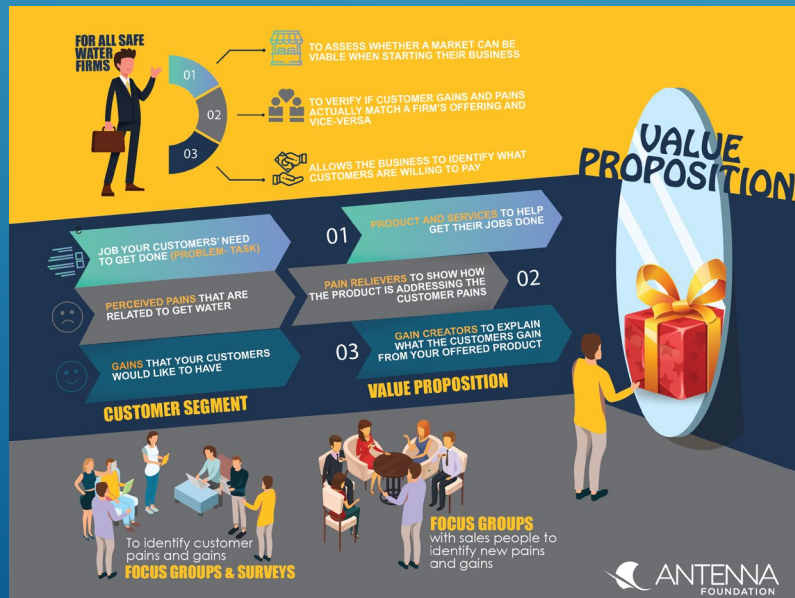
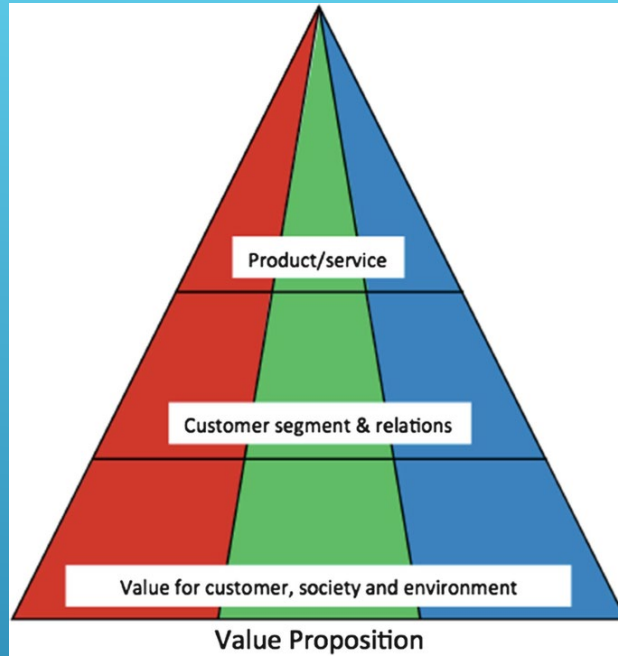
- Clear environmental problem + measurable solution
- Dual value: economic + impact (people–planet–profit)
- Governance, transparency, stakeholder engagement



SUSTAINABLE VALUE PROPOSITION

Why should customers choose you?

- Functional + environmental/social benefits
 - Reduced Total Cost of Ownership (TCO)
- Proof of effectiveness: metrics, certifications, standards



Greenwashing: How to Spot It

From storytelling to evidence

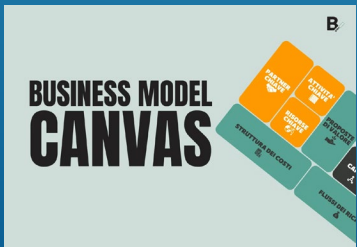
- Vague claims, lack of data, life cycle omissions
- Offsetting without real reductions
- Alignment between promises, products, and internal practices



BUSINESS MODEL CANVAS (THEORETICAL READING)

Nine blocks with a sustainability lens

- Segments, value proposition, channels, relationships
- Revenues and cost structure including externalities
 - Resources/activities/partners oriented toward measurable impact



Measuring Impact

Metrics and frameworks



- Environmental (energy, waste, water), social (inclusion, safety)
 - Materiality: focus on what truly matters
- Transparency: regular reporting and continuous improvement



LESSON 3: SKILLS FOR THE FUTURE (THEORETICAL FRAMEWORK)



Emerging professions and hybrid skills

- Drivers: digitalization, automation, green transition
- “T-shaped” and “ π -shaped” roles: depth + collaborative breadth
- Working in ecosystems: networks, platforms, communities of practice



THE FIVE FUTURE SKILLS (DEFINITIONS)

Creativity – Communication – Critical Thinking –
Collaboration – Lifelong Learning

- Operational definitions and observable behaviors
- Why they are transferable across sectors and roles
- How they complement technical (hard) skills



EFFECTIVE COMMUNICATION IN THE DIGITAL WORLD

Multichannel and clarity

- From concise writing to data visualization
- Adapting to audience, tone, and purpose
- Professional reputation and netiquette



COLLABORATION AND DISTRIBUTED WORK



Models and practices

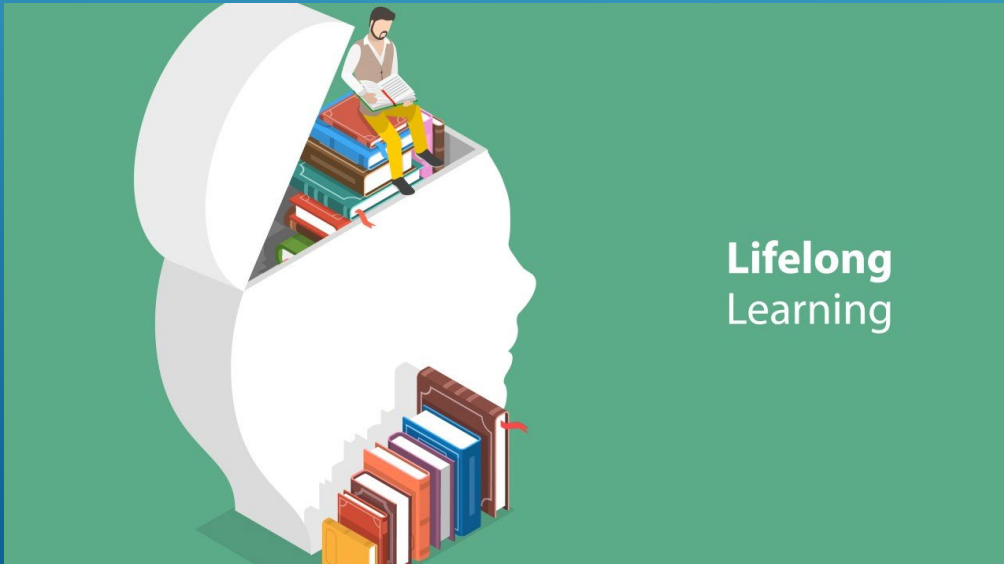
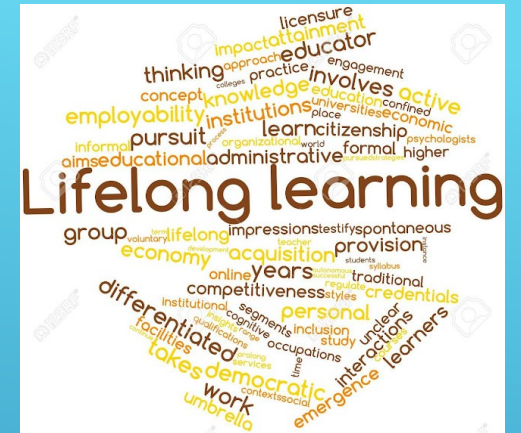
- Asynchronous vs synchronous coordination
- Shared documentation and “single source of truth”
- Feedback culture and traceable decision-making



LIFELONG LEARNING

Methods and strategies

- Cycle: explore → experiment → reflect → consolidate
- Micro-learning, evidence portfolios, peer mentoring
- Metacognition: learning how to learn



ETHICS AND PROFESSIONAL RESPONSIBILITY



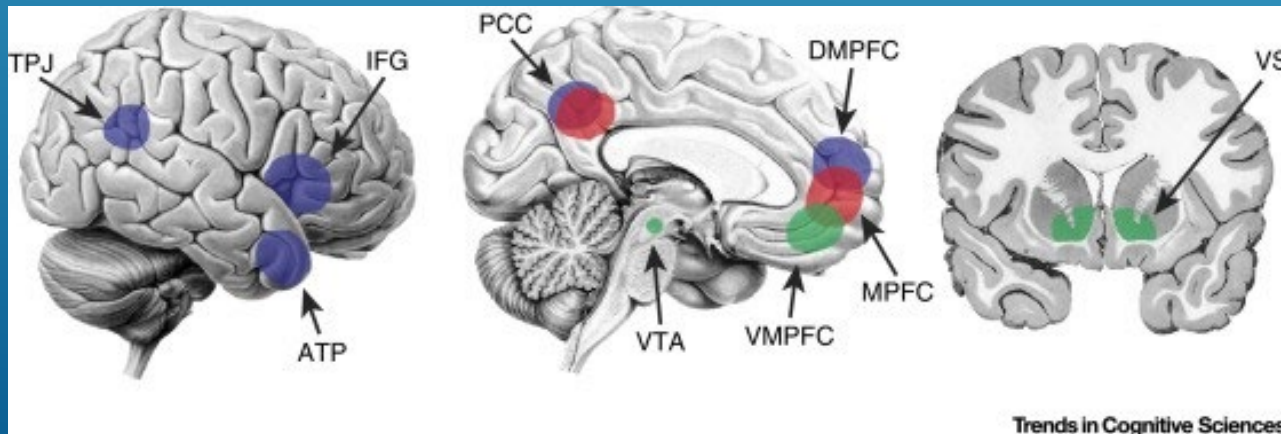
Technology serving humanity

- Algorithmic bias, accessibility, inclusion
- Privacy by design and security as prerequisites
- Sustainability as a quality benchmark

LESSON 4: THE NEUROSCIENCE OF SOCIAL MEDIA (OVERVIEW)

The connected brain: key mechanisms

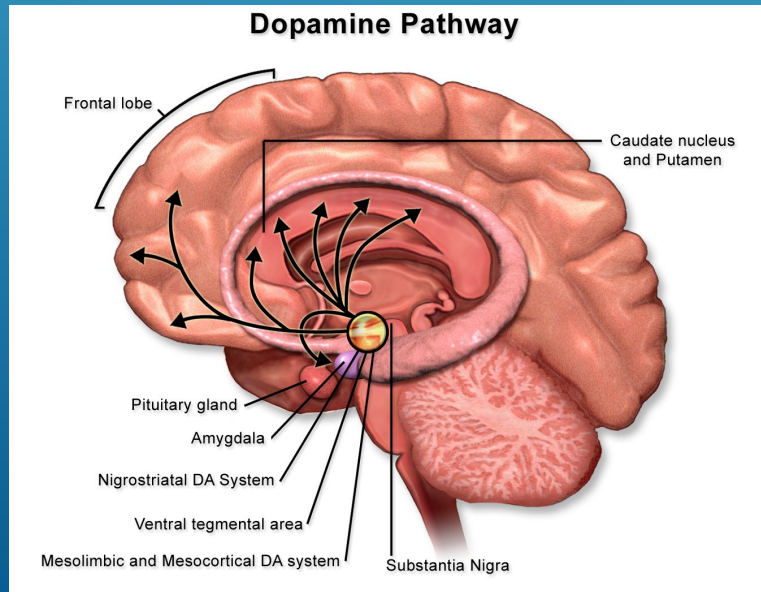
- Reward circuitry and signal-seeking
- Cognitive overload and fragmented attention
- Need for “mental silence” and recovery



REWARD AND DOPAMINE (THEORY)

Why notifications “hook” us

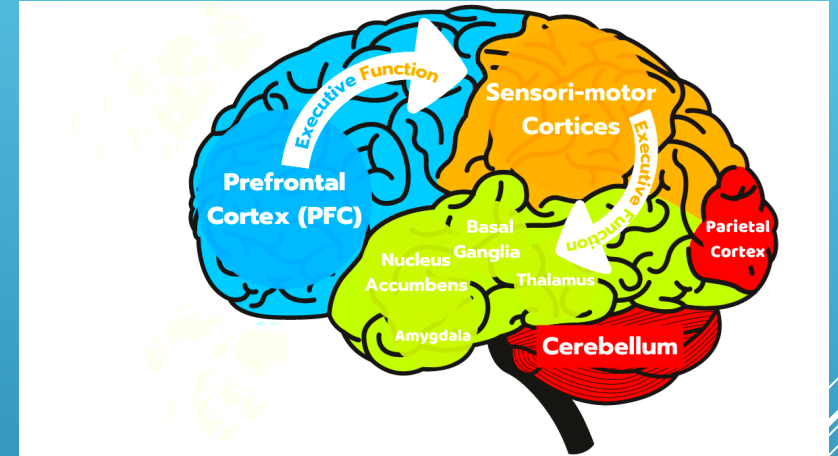
- Variable reinforcement, anticipation, novelty
 - “Social rewards”: likes, comments, approval
- From habit to compulsive use: the cycle dynamic



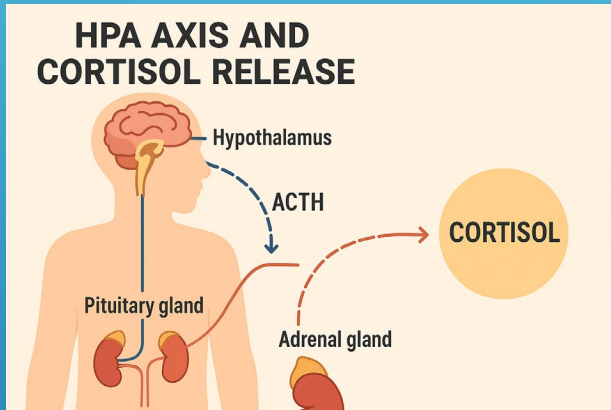
EXECUTIVE FUNCTIONS AND THE PREFRONTAL CORTEX

Self-regulation under pressure

- Planning, inhibition, decision-making
- The myth of multitasking: costs of attentional switching
- Effects on working memory and reasoning quality



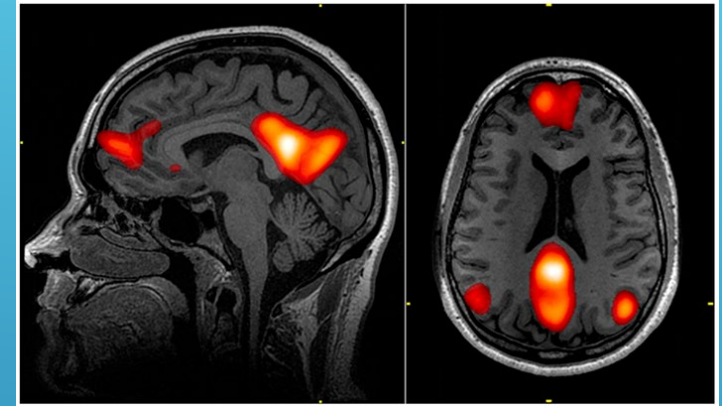
STRESS, CORTISOL, AND INFORMATION OVERLOAD



When “too much” really is too much

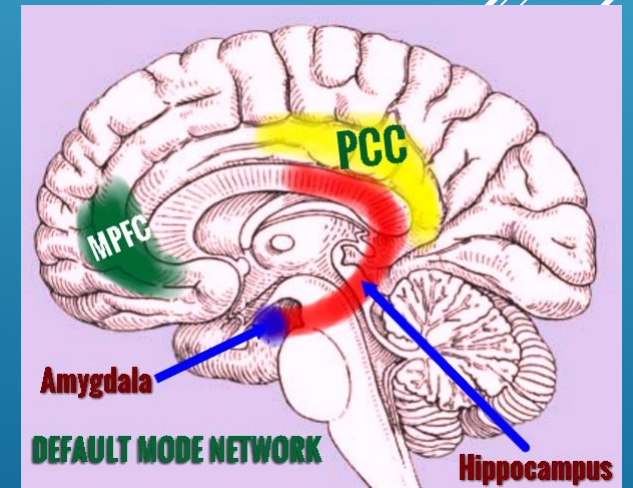
- Simultaneous stimuli and perceived urgency
- Signs of overload: fatigue, irritability, lower performance
- The importance of quality breaks

THE DEFAULT MODE NETWORK (DMN)

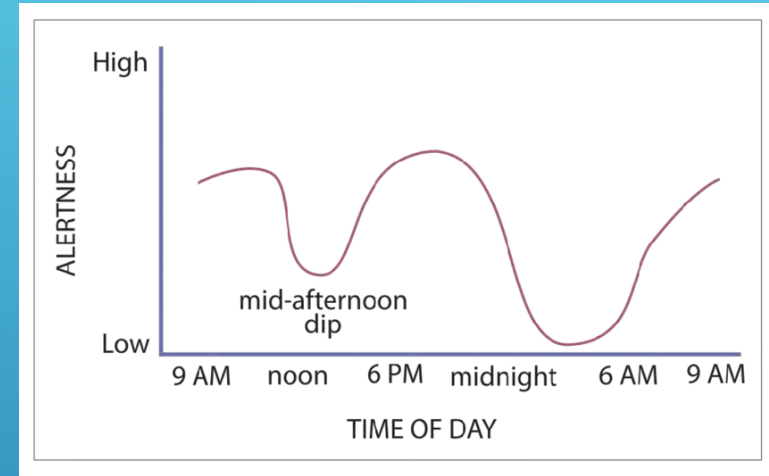


Why downtime matters

- Memory consolidation, creativity, insight
- Link between “mind wandering” and problem-solving
- Balancing stimulation with recovery



SLEEP AND CIRCADIAN RHYTHMS (FOUNDATIONS)



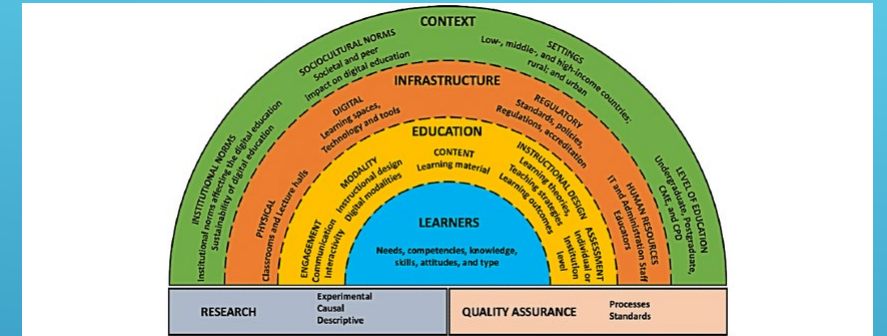
Technology and sleep quality

- Evening screen exposure and disrupted sleep timing
- Consistent shutdown routines and signals
- Sleep deprivation's impact on emotional regulation

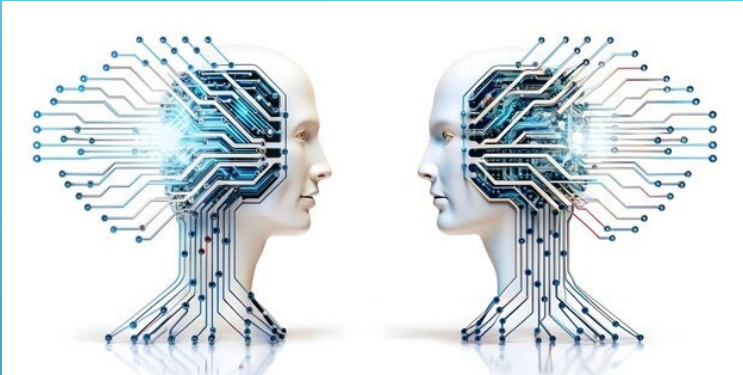
THEORETICAL STRATEGIES FOR DIGITAL HYGIENE

Principles, not recipes

- Designing low-friction contexts (notifications, layout, priorities)
- Monotasking and time-blocking
- Aligning tools to goals, not the other way around



LESSON 5: DIGITAL IDENTITY (THEORETICAL FRAMES)



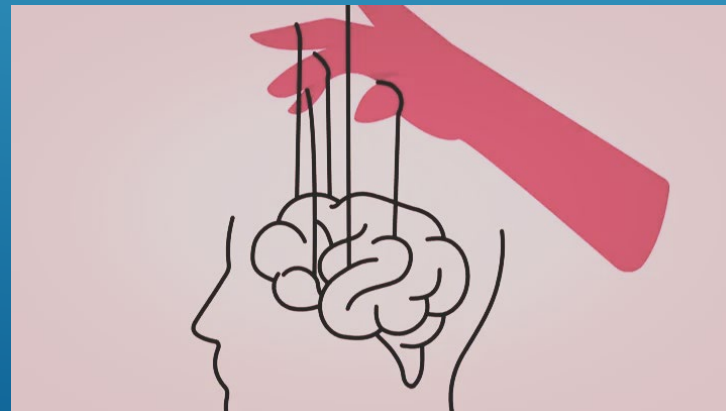
Who we are online

- Layers of identity: personal, social, professional
 - Goffman: self-presentation and impression management
- Narrative coherence between online and offline

AUTHENTICITY VS CURATED IMAGE

Balancing self-expression and strategy

- Motivations: belonging, status, opportunities
- Risks of identity dissonance and performativity
 - Benefits of a sustainable personal brand





ALGORITHMS AND VISIBILITY



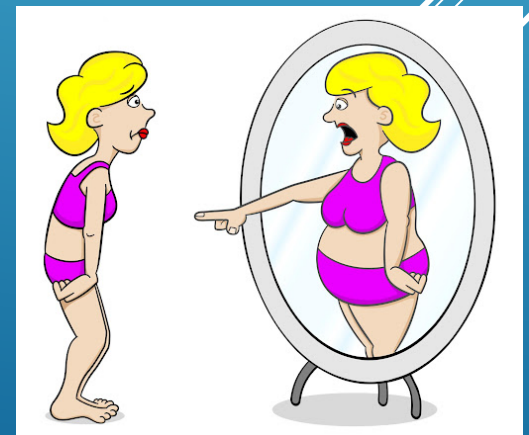
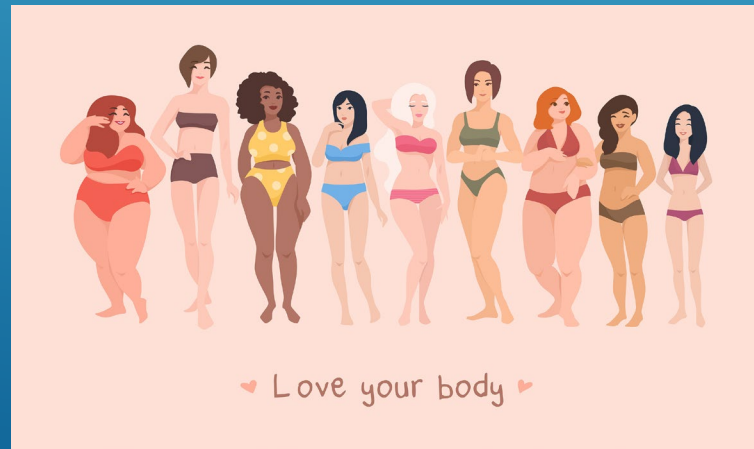
What gets amplified and why

- Signals: engagement, relevance, watch time
 - Shaping user behavior or perception?
- Echo chambers, polarization, information quality

BODY, IMAGE, AND SELF-ESTEEM

Digital aesthetics and self-perception

- Filters, editing, unrealistic standards
- Social comparison and emotional impact
- Alternative narratives: sufficiency, diversity, realism



REPUTATION AND EMPLOYABILITY



Digital social capital

- Public traces, network memory, context
- Professional values: competence, reliability, ethics
- Managing channels: profiles, portfolios, quality contributions



ETHICAL GUIDELINES FOR ONLINE IDENTITY

Sustainable presence

- Transparency, respect, source attribution
- Personal boundaries and conscious privacy
- Responsibility toward communities and audiences



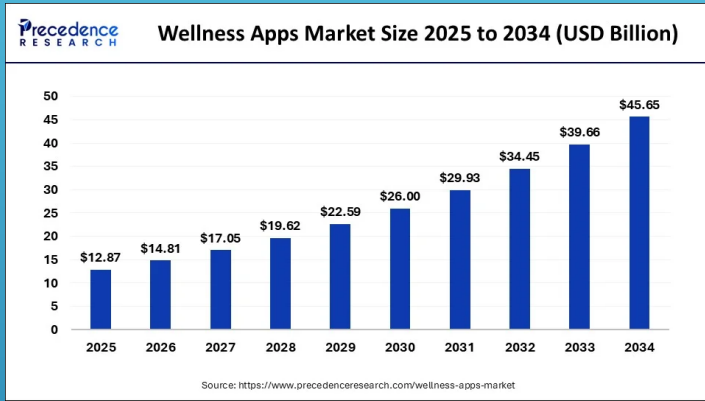
LESSON 6: WELLNESS APPS (CRITICAL THEORY)

Between support and over-monitoring

- Quantified self: tracking body and mind data
- Purposes: informing, motivating, preventing, rehabilitating
- Risks: reductionism, performance anxiety, data dependency



WHAT WELLNESS APPS MEASURE



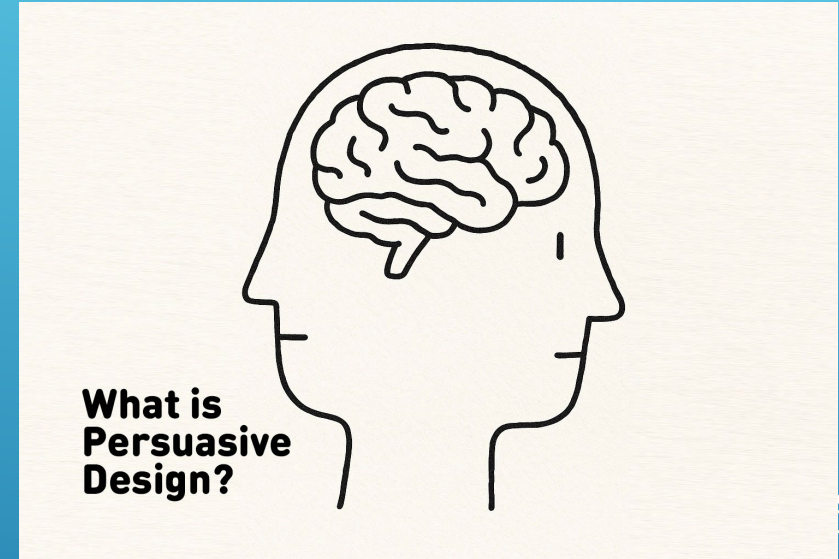
Types of data and their meaning

- Physiological (sleep, heart rate, activity) and psychological (mood, focus)
 - Validity, reliability, measurement context
- From metrics to interpretation: avoiding oversimplification

PERSUASIVE DESIGN AND “NUDGING”

How messages shape behavior

- Goals, notifications, badges, streaks
- Message tone: supportive vs judgmental
- Avoiding guilt and alarmism, fostering agency and kindness



PRIVACY, DATA, AND GOVERNANCE

The ethical dimension

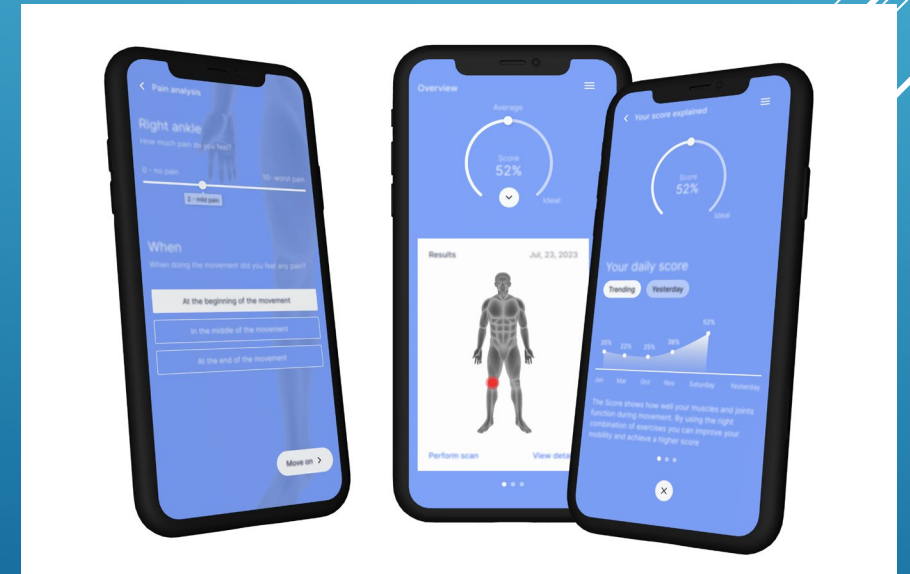
- Data minimization, informed consent, portability
 - Security, interoperability, secondary uses
 - Fairness: dataset bias, accessibility, inclusion



CRITICALLY ASSESSING A HEALTH APP

Theoretical criteria

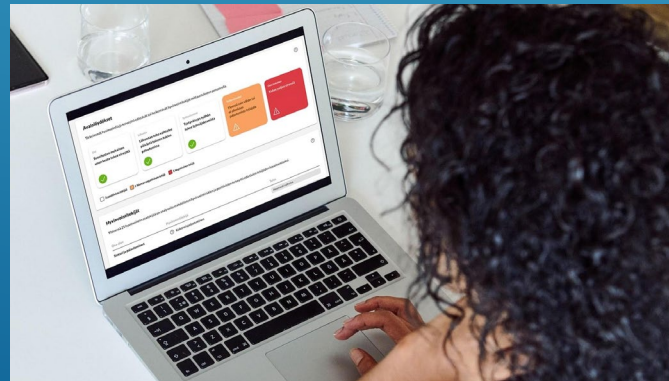
- Scientific evidence and methodological transparency
 - Clarity of objectives and stated limitations
 - Expected emotional impact, personalization, reversibility
- 



WELLBEING BEYOND NUMBERS

Integrating data and lived experience

- Listening to body signals, context, personal meaning
 - Metrics as tools, not identity
- From control to care: a salutogenic perspective



SUMMARY OF THE SIX MODULES



A single overarching skill: **living well with the digital**

- Sustainable technologies: informed efficiency and mindful choices
- Green economy: economic value + real impact
- Future skills: transferable abilities for resilient careers
- Neuroscience: understanding mechanisms for self-regulation
- Identity: authenticity, reputation, ethics
- Health apps: measuring without being reduced to metrics

WHY DHT MATTERS FOR SCHOOLS AND COMMUNITIES

From concept to culture

- Clear, replicable theoretical tools
- A shared language among teachers, students, and families
- Long-term orientation: health, work, citizenship



KEY TAKEAWAYS

Five guiding ideas

- Technology is a means, not an end
- Impact must be measured across the entire life cycle
- Core skills are relational as much as technical
- The brain needs rhythm: focus and recovery
- Body data are signals, not verdicts



ESSENTIAL GLOSSARY

Terms to master

- Digital sustainability, LCA, rebound effect, servitization
 - Default Mode Network, variable reinforcement, digital reputation
 - Validity/reliability, nudging, materiality of impact
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INSPIRATIONAL CLOSING



“Technology is sustainable only if we are too.”

- Cultivating clarity, care, and responsibility
- Building networks across schools, communities, and work
- DHT as a foundation for informed decisions and better everyday choices

THANK YOU FOR WATCHING

- ▶ Italo Naccari Carlizzi
 - ▶ Giorgia Vadalà
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