

# Protecting the environment : a digital competence - Development of a conceptual framework

Sarah DESCAMPS, Gaëtan TEMPERMAN , Karim BOUMAZGUIDA  
& Bruno DE LIEVRE





# Today 4%

Can digital technology and environment protection go hand in hand ?

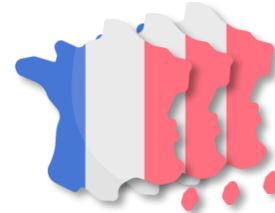
- Digital technology has an impact on the environment.
- The global digital footprint is currently 4% and this percentage could double.



(ADEME 2021)



**More impact**  
than **air traffic**



**3 times**  
France's carbone  
footprint



A conversation  
with **ChatGPT**  
= **50 cl of**  
**water**



Global **Streaming**  
produces as much  
greenhouse gas as  
**Chile**



One **data center**  
= electricity for  
**3 000** American  
homes



**40 000 tonnes**  
of **waste** per year  
sent to Ghana

(The Shift Project, 2019 ; ADEME,  
2022 ; EuroNews, 2024)



A digital competence

Information and data literacy



Communication and Collaboration

**DigComp**

Problem solving



Digital content creation



Safety



European Commission

Redecker & Punie (2017)



A digital competence

Protecting **devices**



Protecting **personal data**  
and **privacy**



Protecting  
**the environment**



**Safety**



Protecting **health**  
and **well-being**



European Commission

Redecker & Punie (2017)



## A digital competence



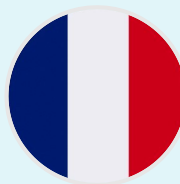
## Belgium

Manual, technical,  
technological and  
digital training  
framework (2020)



## Quebec

Digital skills  
development  
continuum digital  
skills reference  
framework  
(2019)



## France

Implementation  
of the Digital  
Skills Reference  
(2019)



## Switzerland

Framework of  
digital skills and  
culture at EO and  
ESII  
(2020)

The digital sobriety



Digital responsible

Energy sobriety

Ecodesign

Digital ecology

Low Tech

# What is digital sobriety?

Digital sustainability



Green IT

Bordage (2019), Vidalenc (2019), Courboulay (2021)



The digital sobriety



“ ... ”

First mention in **2008**Frédéric  
Bordage**Reasonable** and **rational** use**Raising awareness** of the impact of digital practicesDeveloping **eco-responsible behaviour**Adopting a **posture** of digital sobriety

Bordage (2019), Vidalenc (2019)



Why teach it ?

# In Education, Two Transitions

## Ecological Transition



## Digital Transition





## Why teach it ?



The **urgent** need to raise awareness of digital sobriety



Raising awareness among **tomorrow's citizens**



Raising awareness **among friends and family**



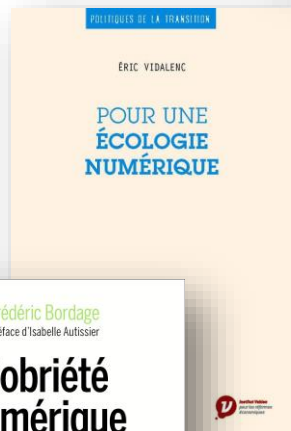
Raising awareness of an **emerging challenge**

Gottesdiener & Davallon (1999), Vidalenc (2019), Vorreux & al., (2019)

How do you teach it ?

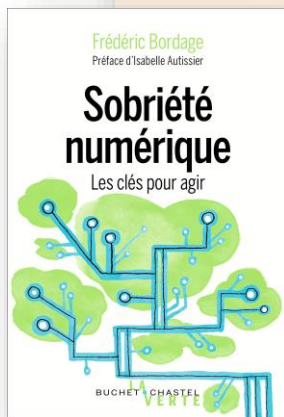


green IT .fr



INR Institut du Numérique Responsable

THE SHIFT PROJECT  
THE CARBON TRANSITION THINK TANK



How do you  
teach it ?



## Focus 1

Raising awareness on  
the **impact of our  
digital lifestyles** on  
the environment



## Focus 2

**The Digital serving  
ecological transition,**  
digital solutions to  
protect the environment.



## Focus 3

Digital sobriety,  
**responsible use** of  
technology.

Bordage (2019), Ferreboeuf & al. (2018), Soares (2013), Vidalenc (2019)

How do you teach it?



# Understanding and analysing



## Life Cycle Analysis (LCA)



Legend	
	Birth
	Life
	Death
	Rebirth



(Gaillet 2003, Berthoud 2017, Bordage 2019, Boulet & al. 2020, ADEME 2021, Courboulay 2021)

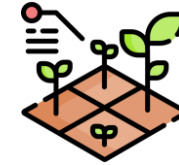
How do you teach it?



Smart City



Industry 4.0



Smart Fields



Smart Home



Electric Car

## Identifying digital solutions



(Vidalenc, 2019 ; Efoui-Hess, 2019)

How do you teach it?



# Education for digital sobriety



Environmental Education



Education for Sustainable Development



Climate emergency Education



Energy Education



Digital Education



Media Education



Humanities



Sciences



Education for Citizenship



Education for Critical thinking



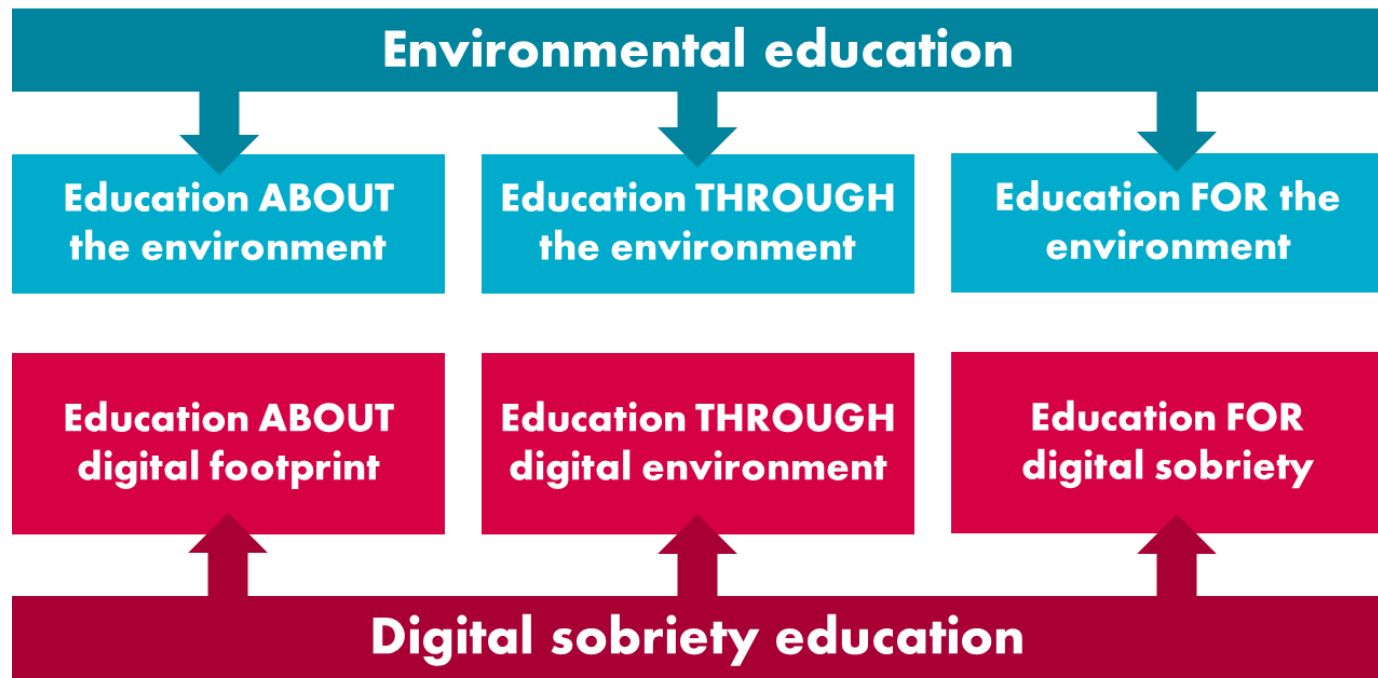


How do you teach it?



**humanités numériques**

Sarah Descamps, Gaëtan Temperman et Bruno De Lièvre, « Vers une éducation à la sobriété numérique », *Humanités numériques* [En ligne], 5 | 2022



(Sauvé 1994)

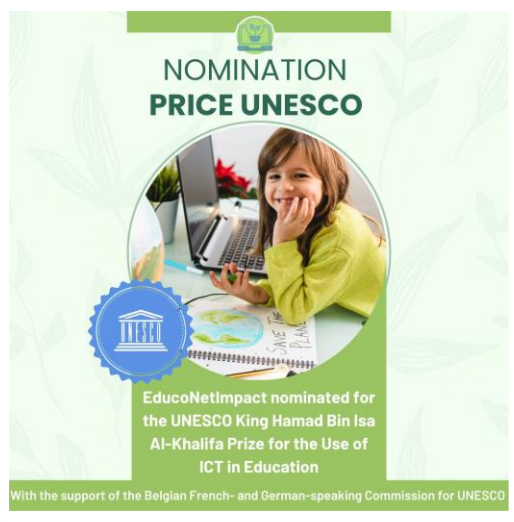
(Descamps & al., 2022)

How do you teach it?



# EDUCONETIMPACT.COM

An educational resource to teach digital sobriety!



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# Thanks for you attention!