Tangible and Intangible Impact of Information and Communication in the Digital Age

Khanty-Mansiysk, Russian Federation,
June 3-8, 2018.
The last MIL ...

or the last chance?
Visions from a Naive Digital Dinosaur
Digital Native
A toxic confusion between interface & information metabolism and the responsibility of teachers

Digital divide
a toxic confusion...
between access and contents and its implications

Information Literacy
A violent emergency...
DIGITAL NATIVES
VS.
TEACHERS
DIGITAL NATIVES
VS.
DIGITAL DINOSAURS
Tell me about a new technology which has brought revolution to medicine

and

is changing the paradigm of brain studies & psychology?
MAGNETIC RESONANCE IMAGING

Allows fine brain studies...

and will eventually change the paradigm in education too...
Let’s see what Magnetic Resonance Imaging tells us about the use of the Internet & what it have to do with Information Literacy...
Digital Natives vs. Dinosaurs

- Mastery interface
- Mastery iconic language
- Mobile
- Parallel-synchronous
- Info-diabetic

- Mastery search
- Mastery content evaluation
- Fixed
- Asynchronous
- No info-diabetic
WHAT SCIENCE TELLS US ABOUT HOW THE INTERNET AFFECTS OUR BRAINS?

Source: “La Recherche”, No 467, Sept. 2012 pp46-60

- The state of the art of this question.
- Only preliminary and recent studies but it does show trends.
- Most of the results are based on brain magnetic resonance imagery.
Comment
INTERNET
modèle notre
CERVEAU
y recherche des informations où qu'on y joue, les zones cérébrales activées ne sont pas identiques.

**Rechercher des informations**

Lois des recherches d'information en ligne, outre les aires impliquées dans la lecture et la prise de décision, démontrent que les usagers expérimentés de la toile sont deux fois plus amples que les novices [1]. Les internautes mobilisent leur mémoire qui siège au niveau des représentations, et émancipent l'emplacement d'une information en ligne que son contenu [2].


**Réaliser plusieurs tâches à la fois**

Pour envoyer un SMS tout en lisant une nouvelle recherche sur Google et en lisant la même page de texte, trois fonctions sont nécessaires : la mémoire introductive, assurée par le cortex préfrontal ; la planification, qui se fait sur le cortex préfrontal et le cortex cingulaire. Il a été démontré que le fait de réaliser plusieurs tâches simultanément affaiblit les capacités à traiter l'information [2].


**Jeux vidéo**

Les jeux vidéo font appel au cortex frontopariétal et au cortex préfrontal [1]. Plusieurs études ont montré que le fait de jouer à un jeu vidéo à long terme, permet d'améliorer les performances cognitives, notamment en augmentant la vitesse de traitement des informations et en augmentant la performance visuelle V4 (dans le cortex visuel) [2].


**Social network**

D'après une étude anglo-danoise, les personnes ayant un grand nombre d'amis sur Facebook présentent une densité accrue de la matière grise qui contient le corps des neurones au niveau de l'amygdale et des cortex temporaux et entorhinal, zones intervenant dans la perception sociale et la mémoire associative [1]. L'étendue des relations virtuelles semble impliquer un plus grand développement de structures cérébrales dédiées aux relations sociales. Mais cela reste à confirmer par d'autres études.

Internet and the brain

- **Dinosaurs** do not read screens as they were a book.

- **Search** activates, in **dinosaurs**, the same areas as reading plus many more; in any case much more areas compared to **natives**.

- The memory of **dinosaurs** has changed: they keep the **path to** information not the information itself.

- **Synchronic multi-parallelism** of **natives** causes loss of concentration & reduction of efficiency.
Internet and the brain

- Digital environment does not favor learning.

- No evidence that Internet addiction exists as a pathology (no consensus here).

- No evidence that violent games trigger violent behaviors but they do provide learning of exceptional visual spatial capacities.
FIRST CONCLUSION

- Teachers have a high responsibility mission to help digital native learning, specially in metabolize information into knowledge.

- Information literacy
  - Concentration as a value and an intellectual asset.
  - The teacher complex in front of digital natives is toxic!!!
DIGITAL DIVIDE

“Digital divide, social divide, paradigmatic divide”

july 2007

http://funredes.org/mistica/english/cyberlibrary/thematic/

(also in Spanish and French)
The hurdle track from Information & Communication Technologies (ICT) to ICT for Human Development (ICT4HD) and the process minded approach
Mientras que los componentes de las telecomunicaciones, del hardware y de software son requisitos previos y previsibles, los pilares verdaderos de las sociedades de información centradas en el humano (sociedades de los saberes compartidos) son la EDUCACIÓN, la ÉTICA y la PARTICIPACIÓN articuladas como un proceso sistémico.

Educación en cultura
- de red
- de infomación
- de procesos

Ética
- de red
- de información
- de procesos

Participación en
(durante todo el proceso y multisectorialmente)
- la creación de políticas públicas
- el diseño de aplicaciones
- todas las etapas del proceso de construcción de la sociedad de información.

Referencias:
- "Trabajando la Internet con una visión social", Comunidad virtual Mistica, (2002)
  http://funredes.org/mistica/castellano/ciberoteca/tematica/esp_doc_olist2.html
- "Measuring linguistic diversity in the Internet: models for development and measurement"
  D. Pimienta, in Unesco (2005)
  http://www.uis.unesco.org/template/pdf/csl/MeasuringLinguisticDiversity_Fr.pdf (Francés)
Second conclusion

- This work showed the undervalued importance of Information Literacy in the digital divide.

- The main reason of the undervaluation is the unique focus on access neglecting the language divide and the content divide.
¿SO INFORMATION LITERACY IS ONLY IMPORTANT SO TO BECOME A GOOD PROFESSIONAL?

No!!!!!!!
TWO MAJOR CHALLENGES OF TODAY ARE ALSO CONCERNED...

... by the emergency to develop information literacy strategies and programs
AFP: LOCAL OFFICIAL SAYS THE DRIVER OF THE LORRY HAS BEEN KILLED
¿WHAT RELATIONSHIP BETWEEN INFORMATION LITERACY AND ISLAMIST TERRORISM?
The weakness in information literacy and specifically the lack of capacity to evaluate information are broth culture for:

- Conspiracy theory
- Simplistic racist explanations
- Hate propagation via the Net
- Radicalization via the Internet
Third conclusion

- Information literacy is certainly not the solution to terrorism but it could contribute to reduce its propagation.
WHAT RELATIONSHIP BETWEEN INFORMATION LITERACY AND GLOBAL WARMING???
¿Cuál de estas situaciones produce más CO2?

1. Uso de una computadora en el césped.
2. Tráfico con vehículos en movimiento.
2007 data: IMPACT of 2%
¿What will be the percentage of electric consumption due to the Internet in 2020?

- Traffic grows as the square of number of users.
- Internet bandwidth has an exponential growth.
- Video traffic will go over 80% of total Internet traffic by 2020.

Source: Cisco Visual Networking Index: Forecast and Methodology,
Now what is the percentage of non-ethical traffic on the Internet?

- Fake news chains
- Duplicated download
- False files in P2P
- Email and web spam
- Etc...

Probably more than 33%
Fourth conclusion

One third of huge Internet impact on global warming is due to wrong management of information.

Learning ecology of information is not only a desired competency for professionals, it is also a priority for our societies.
NOW SOMETHING RATHER ALARMING TO THINK ABOUT

Y. Eshet-Alkalai, and E. Chajut, "Change over time in Digital Literacy",

Cyberpsychology & Behavior, Volume 12, Number X, 2009
In a school in Israel, researchers measured the respective level of MIL of a group of students and their parents, separating M and I measures and repeated the measurement of the same sampling 4 years later.
RESULTS

KIDS
FATHERS

IL                  ML                  IL                   ML
2005                                     2009
Fifth conclusion

If nothing is done the level of information literacy of youngsters will not only be low but it will keep dropping overtime!!!

Something to get extremely worried...
Information literacy (much more than media literacy or imbedded with it) is an urgent emergency worldwide.

Today we have more than 4 billions people connected (over 7.5) and aiming to connect the next 2...

How many of them are information literate?
HOW ABOUT SOLUTIONS?

→ **MIL** AS an urgent priority for policies concerning the whole education system from primary to university, but not only (librarians, NGOs and other innovative channels to be involved so to reach out fast and largely)

→ What else?
THE WEB 2.0 PARADOXES AND LEARNING FROM EXPERIENCE
Why virtual communities was one of the most wonderful asset of Internet 1.0 and social networks are such a 2.0 mess?
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<th>VIRTUAL COMMUNITY</th>
<th>SOCIAL NETWORKS</th>
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<td>ADRESS CLOSED GROUPS</td>
<td>OPENNESS TO THE WORLD</td>
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<td>RULES &amp; MUTUAL RESPECT</td>
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<td>MANAGE COMPLEXITY</td>
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SOCIAL NETWORKS

- The “café du commerce” syndrome
- The “watch movie at home” syndrome
- The blurring of privacy frontiers
- The un-censorship as a trigger for freedom of (racist) expression
- The anonymous as a freedom of (hate) expression.
"On the Internet, nobody knows you're a dog."
If you are a Web 2.0 user not only Google, YouTube, Facebook and Twitter knows you are a dog but also they know what is your breed and what dog food you eat…

Yet you can bark loudly and show your teethes anonymously in all those places!!!
PARADOX

Why at the same time 2.0 users have lost their privacy and being anonymous allow many of them to vomit their hatred and racism without fear (on the name of freedom of expression)?
NAÏVE SOLUTIONS

- Learning from virtual communities

→ Stop anonymousness

→ Learn moderation as a high level job (not easy to pass to a robot)

→ Add complexity learning to Information literacy curriculum.
An Internet were the business model is NOT based on advertisements but on pure information theory.

“I have a dream.”

Martin Luther King
THE MODEL IS BASED ON INFORMATION THEORY AND THE REAL VALUE OF INFORMATION (AS OUR UNIVERSE).

CONSEQUENTLY

WE PAY FOR SERVICES AND INFORMATION

AS AN EXAMPLE
-1 US$ 10 000 mails sent
-1 US$ for 10 000 searches
- A fair price for each information instead of a swap with my personal data
I GOT THE (INTERNET) BLUES

IN THIS UTOPIAN MODEL

WE GET RID OF THE MOTHER OF THE FAKE NEWS: INTERNET IS A FREE LUNCH

AND:

SPAM DISAPPEARS NATURALLY

SEARCH CORRUPTION DISAPPEARS

THE ECOLOGY OF INFORMATION BECOMES A VIRTUOUS CIRCLE

YET BUSINESS PLAYERS (SEARCH ENGINES, ISPs, NEWSPAPERS, INFORMATION PROVIDERS,…) MAKE THEIR FAIR AMOUNT OF BENEFITS WITHOUT PAYING THEMSELVES WITH OUR LOST PRIVACY.
I GOT THE (INTERNET) BLUES

- The Internet was an acting utopia from its beginning.
- This utopia was destroyed in early millennium when Google imposed its business model based on advertisements revenues.
- Everything now responds to the logic of advertisements.
- Not only we are no more users but products (and they are using us)...
- ...but many have learnt now to behave like self-advertisements.
WE NEED
BY ALL MEANS
TO HURRY UP
THE LAST mIL
SPECIALY FOR YOUNGSTERS
PLEASE DON’T GIVE ME A LIKE!!
I PREFER YOU TALK TO ME