



THE INFORMATION LITERATE BRAIN

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Information Literacy (IL) in 2013

- Promoting IL and creating IL programmes: major aspect of 21st century librarianship
- Various international declarations (most recently Moscow 2012) affirm this emphasis
- Yet IL is comparatively new and the justification for the practice of IL is still weak
- Most definitions, standards and models talk about IL as set of skills or competencies, assuming a rational information seeking process on the part of the user
- Still many IL programmes/courses as pure user instruction, without a fully convincing body of arguments why IL is necessary



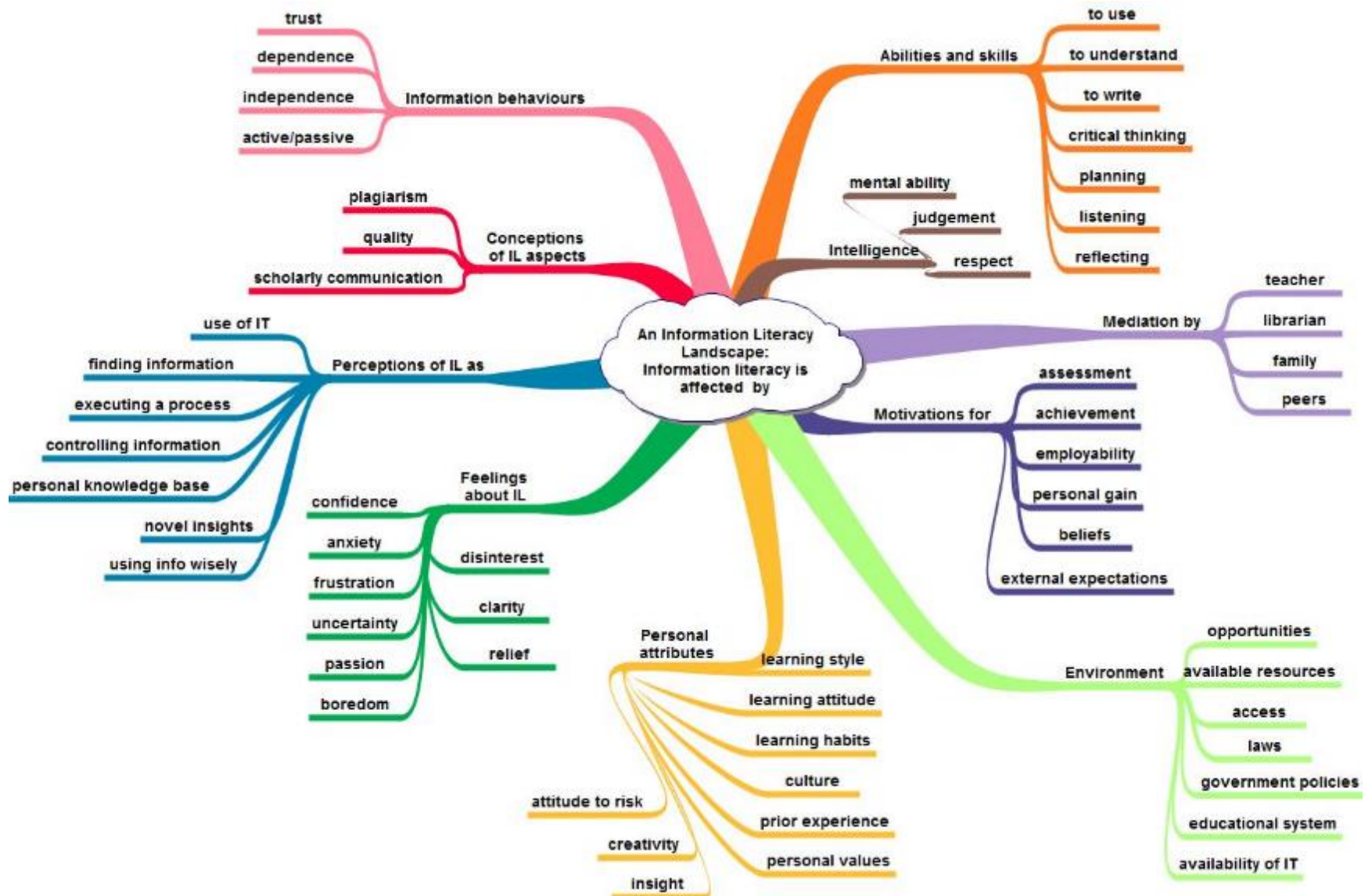


The literature of IL

- is rooted in practice and theory of librarianship
- still treats IL as development of ‘User Education’ in libraries
- just began to talk about parallel literacies such as:
 Computer Literacy, Digital Literacy, Media Literacy,
 Civic Literacy or Critical Literacy
- started to stress importance of user-centred approaches, but hardly any mention of neuroscience
- does not call for the human brain as basis for IL models even if a few discuss psychological processes
- is also unhelpful when it tries to point out the genuine necessity for information literacy

Images of the Information Seeker

- Image of information seeking as rational process still dominant in IL education.
- IL literature often based on rational information seekers who:
 - recognise and define a need,
 - identify search terms and access information systematically,
 - retrieve appropriate content and evaluate it.
- Now more IL programmes focus on participative citizenship and lifelong learning, BUT
- Many IL programmes still designed for the rational information seeker, thus mainly teaching the use of highly structured retrieval systems.



Lots of factors affecting IL but nothing about brain functions

Suggesting a different approach

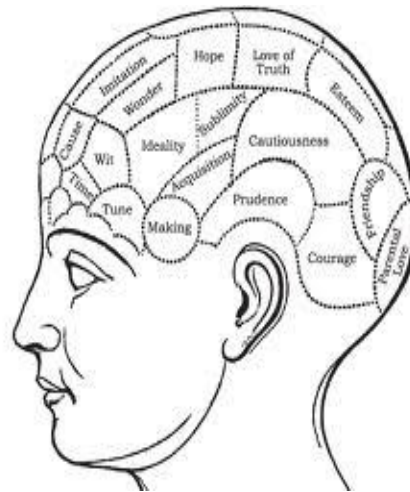
- The traditional view of the information seeker underestimates
 - the confusions and compromises of engagement with information, and
 - the hunches, intuitions and unexpected discoveries that occur in reality.
- A better understanding of the human brain offers a more realistic vision of human interaction with information.
- A partial appreciation of the brain has been implicit in some of the literature, but it was submerged in writings on consciousness, cognition, the self, the personality.

Putting the brain at the centre

- Placing an understanding of brain function at the centre of humanistic and social studies offers fresh perspectives with potential to change theory and research.
- Can be applied to psychology, theology, pedagogy, computer science and many other disciplines, including LIS.
- Applying lessons of brain science to LIS and other disciplines possible because of:
 - advances in neuroscience, and
 - a growing popular neuroscience literature.

Neuroscience in the past

In the past, scientists speculated about the brain and developed 'sciences' such as phrenology.



Early brain science could learn from various sources:
three examples follow

Dissection of dead subjects

This gave us a physical geography of the brain, but did not tell us how it worked.



Inferences from cases of brain damage

The way a damaged brain functions tells us about both the damaged and undamaged areas.



Non-intrusive experimentation

Tells us about brain function from responses in structured tests of individuals and groups



Neuroscience now

- Today neuroscience has scanning techniques such as:
 - Positron Emission Tomography (PET)
 - functional Magnetic Resonance Imaging (fMRI)
 - Magnetoencephalography (MEG)
- These allow the activity of the brain to be observed in all kinds of situations.
- This is delivering powerful insights into how the brain works.

Brain scans



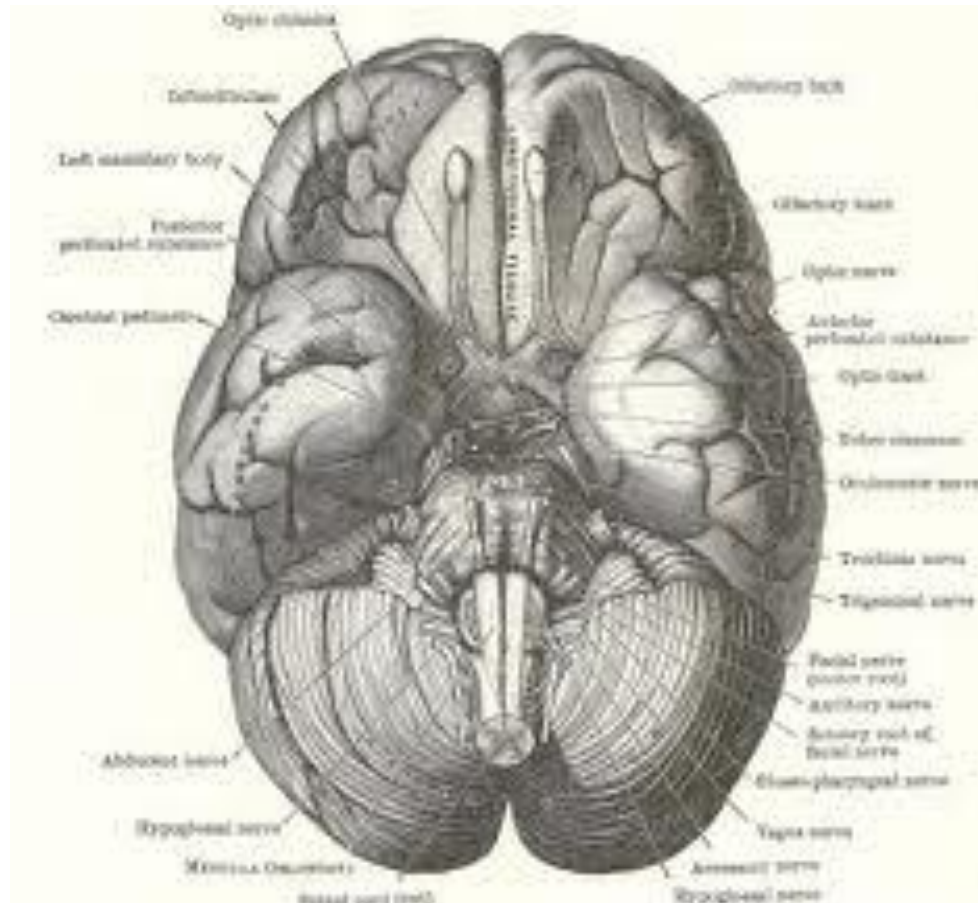
Popular Neuroscience

- Numerous popular books and media stories:
 - Discuss neuroscience as such
 - Use findings from neuroscience to develop ideas in a host of different fields.
- Broadcasts, exhibitions and lectures contribute to the visibility of the subject.
- At its best the literature offers the layperson a helpful entry into difficult science.

What Neuroscience suggests

- Whilst areas of the brain do seem to specialise, for example:
 - The frontal lobes (thought and planning); the hippocampus (memory); the cerebellum (aspects of cognition).
- More important is communication, connection, or ‘cooperation’ within the brain .
 - It is the synapses that matter: ‘I am my connectome’.
- In this connectome, the relationship between the two hemispheres of the brain contributes greatly to effective mental functioning (such as information seeking).

The hemispheres (1)



The hemispheres (2)

- The left and right hemispheres of the brain seem broadly different in a significant way.
- Left side:
 - slow, deliberate, rational, applying attention, searching memory, testing ideas;
- Right side:
 - fast, intuitive, associative, metaphorical, impressionistic (and potentially unreliable).
- Information Science (and IL programmes) have concentrated more or less exclusively on left side activity.

A shift in emphasis

- The right hemisphere of the brain processes
 - massive quantities of information,
 - coded deeply or lightly,
 - at amazing speed,
 - with only limited conscious intervention.
- The implication is that information scientists need to look for ideas on information seeking that value this subconscious activity.

For example e-Information seeking

- Seeking information from electronic resources (principally the Internet) has powerful elements of right side brain function.
- When working with e-information we talk less of
 - systematic, rational searching.
- We talk more of
 - surfing (a metaphor for letting go, accepting the flow).
- We work with naturally associated structures and hyperlinks, following unpredictable routes.

Implications for IL

- Neuroscience does not suggest a fixed and rigid capacity for coping with information.
- In the concept of 'neuroplasticity' it offers a vision of the brain physically changing and adapting to meet needs.
- Those needs essentially take the form of information flows received via the senses.
- IL needs to take account of the way the brain naturally responds to information, rather than attempting to impose structures based on LIS praxis.

Example: learning styles

University of Pretoria IL modules delivered to over 7000 new undergraduates each year:

- uses Hermann's Whole Brain Learning Inventory to assess and respond to student learning styles
- offers students life skills (rather than library skills) and
- points students towards a life-long engagement with information.



Example: incorporating metaphor

- Cole and Leide (2006) suggest that people use metaphor in their thinking.
- We should try to create:
Information accessing environments that are closer to how people actually interact with, organise and store information in memory.
- Information retrieval on the basis of ‘something like this’ rather than ‘exactly this’ is possible and should be cultivated.



*“Good news.
The test results show it’s a metaphor.”*

Example: empathy

- In the past, information was supposed to be delivered
 - neutrally, without
 - commentary and advice (or empathy).
- Many kinds of information, particularly in health care situations, are less comprehensible if delivered without some human contextualisation.



Final words

- We need to recognise the enormous role the right hemisphere of the brain plays in our information interaction.
- If we do that, we begin to perceive a different information science.
- IL is both different and more important in this brain-centred vision of information science.
- However, specific implications for IL programmes still have to be worked out.

