Drafting the Architecture for a Digital IQ

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Carl Sagan (1977) poignantly ostensifies in his book The Dragons of Eden: Speculations on the Evolution of Human Intelligence that human beings have in the most recent few tenths of a percent of existence, invented not only extragenetic knowledge, but also extrasomatic knowledge, of which writing is the most notable example... that is until now with ICT. Whether or not, you agree with Sagan, there's no doubt that knowledge acquisition and transmission are very different from yesteryear.

Cyberspace now is the cradle of a plethora of extrasomatic knowledge (i.e. information shared outside our bodies) that is "googlizable" and deliverable with a click crossing both time and distance as we know it. Furthermore, 21st Century learning is not just about the individual learner's mind, but rather the interface of the learner's mind and ICT, which houses global information given from multiple perspectives.

ICT is truly the learner's helm of the 21st Century! Indeed Piaget asserted, The current state of knowledge is a movement in history, changing just as rapidly as the state of knowledge in the past has ever changed, and in many instances more rapidly. Thus, shouldn't our developmental frameworks evolve to embrace ICT for 21st Century Learning?

Furthermore, let's consider intelligence. In MI Theory Howard Gardner of Harvard describes multiple intelligences as: (1) Linguistic, (2) Logical Mathematical, (3) Spatial, (4) Kinesthetic, (5) Musical, (6) Interpersonal, (7) Intrapersonal and (8) Naturalist. However, digital intelligence is not yet addressed. The authors contend that it's time to draft the architecture for a Digital IQ for 21st Century Schools.

Digital intelligence can include a wide range of technologies, but none is more evident to teachers than the computer. It is the authors' contention that the main factor influencing digital intelligence is, of course, access. Just as musical intelligence depends on access to music instruments. One can only guess the musical abilities of a person who has never played at instrument.

With that in mind, just as there are critical periods of development for musical acquisition (e.g. the temporal lobes of children who learn to play music develop differently than their nonmusical peers) so may be the same for digital media. It is worthy to consider the ramifications of digital access on cognitive development. It is relevant to teachers and teacher educators because teachers have a role in helping to bridge the digital divide. We can intervene. Alas, our research thus far has indicated when looking at children within one standard deviation of IQ (mathematical and verbal) we've seen a developmental difference indicating the digital divide starts early (De Craene & Cuthell, 2006).

So how does that relate to digital intelligence? The later a child has access to technology the wider the gap in abilities. Furthermore, different types of intelligence are at work. Horn & Cattell (1967) describe age differences related to fluid and crystallized intelligences. Fluid intelligence is the individual's ability to think and act quickly, and flexibility to solve novel problems. Whereas, crystallized intelligence stems from learning and acculturation. Therefore, Fluid intelligence decreases with age and crystallized increases.

One can see how this relates to technology acquisition skills. Just think of converting from PC to Mac. Students at an early age already develop a preference, much like left and right-handedness. This is evident when a child comes from a PC home and starts first grade at a Mac school. We've found teachers can tell right away.

To take the notion of digital intelligence further, Let's consider how would we measure a Digital IQ. We could start with a 100 mark as the median of typical development of digital skills and schemas of children at a particular age range. Therefore, a bell curve may evolve. A second factor in digital intelligence is overall general intelligence. The authors have measured that general IQ is correlated as well with digital intelligence. In sum, like verbal and mathematics, shouldn't we consider drafting the architecture for a digital IQ for the 21st Century?