Again, screens inhibit learning: it's the medium not the message

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My PhD thesis entitled *The Social and Neurophysiological Effects of Television and their Implications for Marketing Practice* (see above) has a whole section devoted to the effects of television on learning and education or rather, the non effects. Part II including Chapter 7 documents in detail the failure of television to inform or educate, children and adults, despite the desperate efforts of many to sell it as the answer to all our educational problems. It actually created more than it solved.

Over time, knowledge of the woeful results of ETV faded while the hype lived on. Today, most people would believe that their kids need computers for their education and they are certainly ubiquitous.

However, the reality is as it was before 1986: "growing evidence suggests that computer technology in schools is of no educational benefit" (Spitzer, 2015). Again, vested interests are spruiking the opposite: "the IT industry and educational policy makers repeatedly assert that computers are good for learning" while numerous studies have failed to identify any positive impact and have found negative effects. The latest study by OECD showed that educational systems investing the most in IT saw no appreciable improvements in exam results used in international comparisons (PISA). Worse than that, results of 250,000 PISA students showed that they performed worse at school if they had a computer in their bedroom. This cannot be put down to lack of sleep as the original analysis by Emery & Emery (1976) showed that the deleterious effects increase with time spent in front of the screens.

In Israel, performance declined in elementary and middle schools with computers and in Romania, poorer children whose families received money to buy computers performed worse at school than children with no computers. And on it goes: other studies showed that laptops in classrooms are linked to poorer performance in tests and assignments. They also do not close the achievement gap between socioeconomic groups.

Similarly, US researchers have concluded that taking notes by hand during a lecture leads to better learning than typing them straight into a laptop. Moreover, most students are engaged in distracting activities found on the technology such as the internet.

"Digital media pose serious risks and side effects in educational settings, causing marked levels of internet addiction, insomnia and inattention, especially when used for non-course-related activities. They also take time away from more valuable learning processes" (Spitzer, p29).

So why all this? Spitzer must be given credit for avoiding the ignorant explanations blaming some aspect of the content which normally accompany articles like this despite the fact that they were well and truly debunked during the 1970s and 1980s. Instead he goes immediately to the processing problem which is at the heart of the crisis with the screens. Arguing from experimental psychology and neuroscience, he writes "the deeper content is processed mentally, the better the learning. IT seems to result in shallower processing. A study in *Science* showed that online information is less likely to be encoded in memory than that obtained from books or journals" (Spitzer, p29).

The results from all the studies documented in my thesis (Chapter 11), none of which have even been refuted, on top of the wealth of material in the 1976 study, demonstrated that these screens have a neurophysiological effect called cortical slowing – they ***reverse*** the normal pattern of brain wave activity seen when viewing the world around us or a book, which is a *majority of fast wave and a minority of slow waves*.

This means the information carried in the light to the viewer is not being processed as normal, plus it has a series of flow on effects. For a full range of these effects such as addiction, hyperactivity, reduced attention spans which are constantly reported, see the relevant chapters in *A Choice of Futures* (1976) above.

In 1986, there was no resolution to the question of whether it was the signal from the Cathode Ray Tube behind the TV or the fact that the screens emit radiant light. These days it is questionable if it even matters if it is one or the other or both. As the signals from modern screens are different to that from the CRT, radiant light to which we have no adaptation is certain to be a major factor. Testing could determine if the signals from various screens exceed our capacity to process but more important is simply to once again ***raise awareness that it is these screens that are causing the multiple problems – and then get this problem fixed.***

It really is time that researchers gave up the all but useless pursuit of trying to blame the content of the programming, for example or the social media, or whatever, for all the deficits when it has been shown time after time that is it is the medium, the technology itself, that is the culprit. Until this basic research from nearly 40 years ago is taken seriously, we are going to continue to hold our people back and do untold damage to the brains of our kids.

Emery, Merrelyn (1986) *The Social and Neurophysiological Effects of Television and their Implications for Marketing Practice.* PhD. University of New South Wales

Spitzer, Manfred. (2015). Bottom of the class. *New Scientist*, 17 October, 29-30.