# ICEVI Strategy Review Meeting

# 14th February 2017

Technology and Education

When I was at my primary school I learned to write backwards before the arrival of a Perkins brailler when I was ten; and then there were all those contractions and symbol rules which my sighted peers didn't have to bother about. And, at the same time, I learned to undertake arithmetic with a Taylor frame, an abacus and then a Perkins while my sighted peers just had a pencil and paper. It was quite bad enough being blind and being two years' behind my sighted peers at the age of six without all this nonsense.

I say this at the outset because technology without the proper attitude to go with it will just rot. More than half a century after I left primary school there are still massive tracts of the planet where the Taylor frame is still used and the much superior Cubarithm not known; and the long-running civil war over braille coding, which should have ended in a rule whereby uncontracted braille is the default primary school medium, is still going on.

And so, if we are not careful we will fail to give our children the benefit of a technological revolution which has taken place in three parts:

* First, the development of the internet which has not only opened up massive text resources through digital media but also the whole gamut of global broadcasting;
* Secondly, the development of generic devices like the iPhone with text to speech and, latterly, speech to text; and
* Thirdly, the development of a refreshable braille device for approximately $400 Dollars for 20 characters.

All this may mean nothing. Educators all over the world have been unjustifiably snobbish about broadcasting in general and educational broadcasting in particular, even though it opens up massive quantities of free and well-produced information.

Educators in the past decade have also been very sniffy about the use of mobile telephones in the classroom; but this is to confuse the common use of technology with its capacity to deliver; why PC/Microsoft bundles should be worthy and serious but iPhones an educational disaster is beyond me when most developing countries are in a position to leap-frog the PC age straight into the phone and tablet age where the processing capacity is adequate but power consumption lower and mean time between faults much higher.

All over the world, blind people are down loading digital text off the internet but educators point out, quite rightly, that a necessary precondition for good literacy is the ability to examine the text rather than merely listening to it and that is where refreshable braille is so important.

If a blind child attends school for ten years she will require:

* 1 cubarithm
* Three mobile phones
* Two Orbit braille readers.

The total for this bundle will be in the region of $1200 per child on top of generic costs, which is not forbidding, but we will only be able to do this if we divert funding from traditional, very expensive, low productivity conventional braille presses. What the world will want us to do is to fund the $1200 on top of braille press budgets but this is unreasonable. The problem here, as with much else associated with braille, is provider self interest rather than consumer benefit.

You will have noticed in that bundle cited above, that I didn't mention content. The Orbit Reader can either access a whole suite of textbooks from an SD Card or it can download whole books, via Bluetooth, from the Internet. There has quite rightly been a warm welcome for the Marrakesh Treaty but it's largely an instrument for the analogue age which was required 30 years ago when we started negotiating it; the planet is now awash with useful educational material that is not in copyright at all.

You will also have noticed that I have not mentioned DAISY; this is not because it is not valuable but because the merger between the DAISY Standard and EPub3 means that it hardly needs to exist as a separate standard-setting entity but, much more important, you don't need a dedicated DAISY player to access DAISY files; that can be done, as I saw in India, by using a simple MP3 player.

But unless teacher training delivers a sound technology element, teachers will continue to be frightened of new developments and will want to stick to the old ways which ranks complex braille skills over everything else. All the research shows that braille is a necessary precondition for certain kinds of employment but we need to harness digital technology to enhance life chances for all children and that not only means the ability to consume data but also to produce it. It is particularly relevant that blind children can establish an internet persona without having to admit impairment.

Although some eye conditions mean that children are most comfortable accessing images on small devices like mobile phone screens, I am scandalised that nowhere in the world have I yet seen a massive TV screen in a school for children with visual impairment. Disastrously, when I was at school, teachers believed that sight was not like love which increases according to how much of it you give away, but like money, which decreases the more you give away. Consequently, instead of being stimulated by visual images ever day, the children with residual vision were only allowed to watch television at weekends. Television is not only a vital learning medium it is also a critical social medium which establishes peer relationships and breaks cultural isolation.

I should also mention that one emerging technology of particular interest is 3d printing which will be expensive in countries with cheap labour where intricate tactile diagrams can be produced manually; but it is important to remember that the effectiveness of tactile graphics is widely over-estimated, another instance of the providers not really taking notice of the consumers but the prospect of producing highly detailed, solid objects from digital files is truly wonderful.

I should close by making three summary remarks:

* First, since the development of the World Wide Web and Windows 3.x in the early 1990s, there has been a technological revolution which has hardly had any impact on the field of the special education of visually impaired children
* Secondly, nothing will change unless we shift out focus from producers to consumers; and
* Thirdly, if we do not grasp this digital opportunity, the gap between visually impaired children and their sighted peers will be even wider than it was in the analogue age.

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