GUTENBERG[3]

TRAINING WHEELS FOR LITERACY

A CHALLENGE TO EDUCATORS, LINGUISTS, PUBLISHERS OF LEARNING TO READ READING MATERIALS, DEVELOPERS OF AUTHORING AND PUBLISHING SOFTWARE AND DEVELOPERS OF FONTS

ABSTRACT

We are proposing that you come together and develop a new method of publishing (on paper and computer screens) in which the way letters are visually presented cues the developing reader to a significantly more intuitive and immediate mode of apprehending the word's sound and therefore meaning. Particularly for young children, but also for adults struggling to read, this approach to interfacing their natural language capacities to the written word could represent a breakthrough in their education and capacity to learn.

BACKGROUND:

The publishing revolution which led to the educational revolution of the Renaissance wasn't the result of the printing press. Though serving only the elite, the printing press had been around long before the Renaissance. It was "moveable type" that made it possible to easily set-up or "program" the press and that brought the cost of publishing down to a level that eventually enabled the masses to experience the diversity, richness and learning opportunities previously reserved only for the few.

However, since the revolution, nearly everything about the publishing process has improved, except the publication. In fact, one of the most important aspects of some publications -- their role as the learning environments through which children learn to read -- hasn't changed since Gutenberg, despite "desk top publishing."

For many millions of children and adults, learning to read is the same old, difficult process it has been for hundreds of years. It is a process of acquiring an "inner interface," an inner translational system that can allow their minds to "hear" the sounds of words by looking at the string of letters that comprise them. That acquiring this translation capacity is difficult is evidenced by listening to any five year old conversing with friends and then listening to him or her read. The difference in range and fluency is striking -- it is obvious that children's oral language dexterities far outpace their reading dexterities. Humans are born capable of acquiring oral language capabilities simply by being around other talking humans, but when it comes to learning to read, our natural and instinctual language capacities have to be "conditioned" into service through a long and tedious process of visual associations and (at the time they have to learn them) totally arbitrary rote rules.

While children have difficulty learning to read words, most three-year-olds know their "A-B-C's" cold. They can recognize letters and, treating them like any other "thing" in their world, associate them with a particular sound. Given this capacity and the natural language dexterities just spoken of, what is it, then, that is so difficult about learning to read?

The core problem is obvious: In pronouncing the alphabet, there is a sharply defined, one-to-one correspondence between the visual appearance of a letter and its sound. But when letters combine in words, the way the letter needs to participate in the sound of its host word no longer has such a correspondence. Twenty-six letters can give rise to 40 sounds in ways non obvious or intuitive. Because the mental overhead required with reading is so un-intuitive and inefficient, an inner "stutter" occurs during the translation which breaks the natural flow and rhythm the reader would otherwise rely on in oral language processing.

Given the difficulty (and the comparative ease of relating to other media, such as television), it is no wonder so many children have difficulty sustaining motivation when reading. Whereas the child's oral language world is rich with range and power, the clumsiness and inefficiency of the reading process forces authors and publishers of children's materials to "dumb down" to a level children find boring as well as frustrating. Again, not

because they can't understand the meanings -- the TV programs they watch and the conversations they have are radically more complex -- but because the (tacitly acquired) "interface" is so poor. Reading is not exciting until you really learn to read -- why work to learn to read when what is being read is so boring?

In today's age of desk top publishing, why can't we make reading words nearly as effortless as hearing them? And, what if we could?

OUR GENERAL CHALLENGE:

We are challenging you to provide developing readers a way to more fully utilize their natural language capacities by making the appearance of words visually cue the word's sound in significantly more obvious and intuitive ways. More specifically, rather than having only uppercase and lowercase variations in visual appearance, we are proposing that letters be capable of being visually represented in ways intuitively suggestive of how they participate in the sound of their host word. Essentially, we are proposing you add a new level of modular flexibility to the idea of a character.

By developing "character families," each letter can be presented in a variety of ways reflective of its various sounds when participating in words. There can be both alphabet-general and letter-specific visual variations, such as sharp, flats, drags, louds, softs, silents, and blendings, both forwards and backwards. By modulating the boldness, size, slant and shape of letters (analogous to a visually-intuitive, musical notation system), we think it possible to significantly help developing readers learn to read. Unlike phonics or ideographic props, this approach would work without the secondary confusion of multiple spellings.

Whereas, in the days of Gutenberg, adding another dimension of presentation options to each character in a typeface would have proved impossibly cumbersome, today, adding such capabilities so that word processors can modify the appearance of letters in a font family shouldn't represent any technical problems at all.

EDUCATION TASKS:

For educators, the challenge involved is in learning to tune the visual presentation modalities of each character to maximize its general intuitability across the full range of its possible modes of participation. We recommend that a team of linguists and reading teachers collaborate to develop a starter set of character presentations which would be subsequently modifiable by them based on their actual experiences in using the system with struggling readers. Members of this team would be joined by alpha, and subsequently beta, testers of the first team's work. Concurrent to the development activities, a clearing house would be formed that would receive the character families and presentation dictionaries, perform evaluations on overlaps, and distribute the growing system to all interested parties.

TECHNOLOGY TASKS:

Conceptually, the technology involved is relatively straightforward. The first component is the "carrier" or shell that extends the font family to have the added capacity to store the alternate presentations of each font. The second component is the additional user interface extensions that enable the manipulating of alternate fonts. The third component is an on-line, font generator with tools to augment the user's ability to manually adjust a character's appearance and create the alternate fonts. The fourth component is the "presentation dictionary" which, like a spell checker in a standard word processor, scans the words in documents and looks them up on its data base. Having found a word match, the dictionary reads the character presentation modalities for the letters in that word and adjusts the letters of the word in the publication to match. .

Taking up this challenge could create a breakthrough in literacy and, even beyond that, change the ecology and efficiency of the "inner interface" that regulates learning. Take it up!