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The Impact of Cognitive Deficits in Developing Technological Advances

Technology, like education, has an economic imperative. To solve the problems, it must accommodate the needs of the majority. But as the market becomes saturated, one attempts to fulfil the needs of the minorities. In mainstream computing, we can see that the standard computer with a standard word processor will be adequate for the 85% of the population that does not have some form of special needs. But specialist technology can assist partially sighted (by using magnifiers) to overcome sensory deficits. More recently the needs of those with cognitive deficits such as dyslexia have been addressed using text-to-speech and planning software (e.g. concept mapping) to overcome their cognitive processing deficits. But what of the mobile technology? What are the cognitive deficits we should consider, and how do they impact upon the needs of the individual and the choices they make with respect to choosing and using the technology?

This presentation will provide a brief understanding of how these individuals are currently disabled by the technology, and what could be done to address these issues. A case study will be presented of an ongoing EU funded project that uses the multimedia nature of the mobile phone to overcome their cognitive deficits as well as provide a motivating platform for dyslexic individuals to learn a new language, an aspect that is usually very difficult for this group. The projects fundamental hypothesis is that in the same way our real understanding of cognitive processes come from the studying the abnormal, so our understanding of how to make the technology can be made more suitable to individual needs will come from understanding the needs of these special interest groups. The conclusions are that the cognitive deficits that occur in the most common special needs areas of dyslexia, dyspraxia, ADHD, and Aspergers syndrome can be addressed, and as a consequence the technology can be improved for everybody (not just those with special needs) in the learning, working and living environment.

Dr. Ian SMYTHE is an education consultant concerned with development of computer based resources to help individuals with cognitive deficits and those supporting them. As well as working across Europe, his projects involve collaboration in Brazil, China, Canada, Japan and the Philippines. One of his projects concerns using mobile phones to teach a second language to dyslexic students, and the implications for a wider audience. He has widely published in the field of dyslexia and multilingualism, and was senior editor of the *International Book of Dyslexia*. E-mail: ian.smythe@ukonline.co.uk.