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Re-engaging the SEN Child into Learning through Social Networking

A Case Study

Introduction

Education should be the foundation for independent living in the big wide world. Across Europe there are ongoing arguments over how to adjust the mismatch between the skills learned in school and those required to take a meaningful place in the real world, including the world of employment. This discrepancy is highlighted especially with SEN children, who find it difficult to engage within the framework of traditional teaching, whereas they clearly show talent in learning important life skills outside the school setting. If the content and delivery are engaging and motivating, these individuals can find ways to overcome their learning difficulties. Anecdotal evidence suggests that the more education resembles motivating real-life situations, the more the SEN child can be successfully integrated into mainstream education, even if not necessarily working at the same level as their peers.

As Smythe[1] highlights, technology has enabled many special needs child to engage in the learning process at a level not previously experienced through individualized e-learning and assistive technology. However, the latest directions as exemplified by web 2.0 activities, will leave many in this group disenfranchised due to the inconsistency between the skills necessary to engage in these activities and the skill set of this special group.

When O'Reilly[2] coined the phrase "Web 2.0" in 2004, his version of the future was through empowerment of the individual to engage in the process of the web development through collaboratively creating, sharing and referencing content, e.g. blogs, wikis, social tagging, podcasts, etc.

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[1] I. Smythe, J. Everett and R. Salter, *The International Book of Dyslexia: A Guide to Practice and Resources*. London: John Wiley & Sons, 2004.

[2] T. O'Reilly, "What Is Web 2.0", http://oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html.

However, for the special needs individual, this apparent opening up to all really means opening up to all except the SEN individuals.

The defining issues of the dyslexic individual are problems with the reading and writing elements particularly when carried out in real time (e.g. chat) within social networks. The brief attention span of those with ADHD will create its own problems, while those on the Autistic Spectrum will have problems of social skills, i.e. social networking which may need careful management as netiquette and boundaries are much less understood. However, through careful development of a system that acknowledges their strengths and weaknesses, it is possible not only to compensate for these difficulties but also to use social networking as part of a learning (and socializing) strategy, and re-engage those who would otherwise be marginalized in the new web environment.

About Special Educational Needs

Experts agree that the Special Educational Needs (SEN) child may be defined as somebody who "has a learning difficulty which requires special educational provision to be made for him or her".[3] This provision is not about giving them an advantage over other children, but to maximize their potential to engage in learning activities, and access the curriculum and demonstrate their potential through examinations or other evaluated activities. Only when they have proof that they can fulfil the intellectual requirement of a given job will they have the potential to survive in the working environment. It may be argued that the two most prevalent and well researched SENs are dyslexia and Attention Deficit Hyperactivity Disorder (ADHD).

The European Dyslexia Association define dyslexia as "a difference in acquiring reading, spelling and writing skills, that is neurological in origin".[4] Furthermore, they suggest that "It may be caused by a combination of difficulties in phonological processing, working memory, rapid naming, sequencing and the automaticity of basic skills". It is these underlying cognitive deficits and their impact on development of living as well as learning skills that cause dyslexia to have consequences well beyond literacy in the first language.

More specifically those skills such as sound discrimination, sound analysis (pulling sounds apart), sound storage, sound synthesis (putting sounds

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[3] Teachernet, "Special Educational Needs (SEN) Policy" (2008), http://www.teachernet. gov.uk/management/atoz/s/senpolicy.

[4] EDA, 2008, http://www.dyslexia.eu.com/whatisdyslexia.html.

together to make new words) and memory which cause first-language literacy difficulties will also cause problems in learning additional languages. The feeling of frustration and failure in front of their peers will lead to low motivation to learn any subject, especially another language.

Attention Deficit Hyperactivity Disorder (ADHD), as defined by the International Classification of Diseases[5], is widely recognized as being an underlying cause of children's achievement problems in school. It affects 3–5% of the population, and typically presents itself during childhood. Its symptoms are distractibility, difficulty with concentration and focus, short-term memory loss, impulsivity, restlessness and problems with conforming to social behaviour norms, impairing many areas of life functioning including learning. The syndrome often brings conjoining problems, such as anxiety towards achievement, oppositional defiant behaviour, social isolation and low self-esteem, all of which further aggravates life in school.

Therefore both dyslexic and ADHD pupils have special educational needs that have to be addressed when designing education for these individuals.

Web 2.0, E-learning, and Mobile Phones

Berners-Lee[6] has argued that many of the functions that web 2.0 apparently offers already exist elsewhere. Irrespective of when they were "invented" the increased focus on certain functionality in web 2.0 encourages exploration of new combinations of pedagogy and technology.

According to Nichols, "The choice of eLearning tools should reflect rather than determine the pedagogy of a course; how technology is used is more important than which technology is used."[7]

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[5] ICD-10, *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines*, Geneva: World Health Organization, 2008.

[6] N. Anderson, "Tim Berners-Lee on Web 2.0: 'nobody even knows what it means'" (2006), http://arstechnica.com/news.ars/post/20060901-7650.html.

[7] M. Nichols, "A Theory for eLearning", *Educational Technology & Society*, vol. 6, no. 2 (2003), pp. 1–10, http://www.ifets.info/journals/6_2/1.pdf.

He went on to suggest that "Technology is pedagogically neutral" and that "The selection of education approach or philosophy is therefore more important than the selection of the technology itself". He also suggested that "technology is not content, and technology is not process". Yet if the technology is the only way these individuals will access the specific content, it becomes integral to the process. Furthermore, if pedagogy refers to "the principles and methods of instruction"[8] and the method, i.e. the mobile phone, makes a difference, then clearly the technology is part of the pedagogy. Put it another way, McLuhan[9] appears to be shown correct again in his phrase "The medium is the message", and we need to study the medium more, as it will impact significantly upon the content.

The question posed by the EU funded project Calldysc[10] was whether in the case of these SEN children it would be possible to use the mobile phone (as opposed to the web or CDs) as the medium for learning a second language, an area usually neglected in their teaching. Furthermore, was there potential in using the web 2.0 principles to teach, or at least provide motivation toward re-engagement with a subject that is increasingly important in an international working and living environment.

Collaborative Learning for SEN Students with Mobile Phones

The web 2.0 activities could be described as like speaking instead of just listening, or writing not just reading. And that is where the problem lies. Moving from a receptive to a productive culture creates difficulties for many SEN individuals, from the challenges of writing for dyslexics, to the interaction of social networks. The problem is about making public one's weaknesses. Having had to endure the ridicule and humiliation of one's peers, they will obviously be reluctant to expose themselves again to such attacks on their self-esteem.

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[8] Cf. http://wordnet.princeton.edu, accessed through www.dictionary.com.

[9] Marshall McLuhan, *Understanding Media: The Extensions of Man*, London: Routledge, 1964.

[10] Cf. www.calldysc.eu and www.calldysc.info.

By building a special community for dyslexic learners, the Calldysc project provides evidence that a shared environment can be made to overcome the basic fears and negative first experiences of this group who normally have difficulties in learning a new language. The web 2.0 principles, including social networking, shared environments, personal blogs, and collaborative learning, even across national boundaries, were adapted to the needs of this group by user prompts, short text, high levels of interaction and other techniques to promote re-engagement into a field many SEN children leave at an early stage.

A blended learning environment was developed where the dyslexic pupil was re-engaged to language learning on mobile phones and portable Playstation game consoles (PSP), and collaborative content-creating and sharing activities through a social networking frame. These language teaching games were designed not to substitute traditional language teaching, but as part of a blended learning methodology.

Informal and post-modern theories, like that of Kilgore's[11], focus on the origins of the drive for learning and the diversity of the learners and the learning environment. They emphasize the self-taught nature of learning and how learning in various places can often be more effective than classrooms. Motivation is a key issue when re-engaging SEN pupils, so our learning frame gives them the choice of device (mobile phone, game console or computer) as well as the environment (classroom, remote stand-alone or computer-mediated peer-to-peer).

Special attention is paid to the learning preferences of the dyslexic and ADHD student. The teaching material reflects these special educational needs by:

- Multisensory teaching, where the simultaneous, multimodal information processing of the ADHD pupil is better suited. Also, the dyslexic learner responds better to teaching, where the orthographic, phonetic and semantic element of language is pre-

[11] D. W. Kilgore, "Critical and Postmodern Perspective on Adult Learning", *New Directions for Adult and Continuing Education* 89 (2001), pp. 53–61.

sented together. Multimedia programming makes this task easy to solve.

- Non-competitive, collaborative environment, where students' self-esteem is not challenged. Most feedback given to learners are positive and individualized, there is no comparison with the results of others, whilst personal improvement can be tracked.
- Game-like learning activities to raise motivation and keep attention. As these games are short units of teaching content (micro-learning), they better fit the smaller attention span of ADHD students and they do not resemble the already feared traditional learning format.
- Activities are built up from the easier passive listening level towards the more demanding active (written and spoken) language production to overcome anxiety and oppositional attitude towards learning.
- Dyslexia-friendly solutions are used wherever possible. For example there are mother tongue audio instructions to the games, writing is aided by drop-down menus to choose words from.
- Careful attention was paid to the collaborative elements, to minimize the potential for ridicule and embarrassment that frequently occur to dyslexics in traditional learning environments. Thus while in some instances several children using one mobile device can be a good learning environment as also described by Lan, Sung and Chang,[12] due consideration was given to how this part was implemented.

Calldysc Web 2.0 Games

The activities, in line with Cobb's suggestions,[13] are designed to include the most popular aspects of everyday web and mobile usage, building on a carefully selected vocabulary using repeated exposure to maximize the learning potential. Activities included social networking, editing and sharing personal data, and playing synchronous mobile games.

A simple illustration of how the web 2.0 principles are adapted for this user group is the personal profile. Instead of the traditional open-ended

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[12] Y-L. Lan, Y-T. Sung and K-E. Chang, "A Mobile-Device-Supported Peer-Assisted Learning System For Collaborative Early EFL Reading", *Language and Learning Technology*, vol. 11, no. 3 (2007), pp. 130–151, http://llt.msu.edu/vol11num3/pdf/lansungchang.pdf.

[13] T. Cobb, "Computing the Vocabulary Demands of L2 Reading", *Language Learning & Technology*, vol. 11, no. 3 (October 2007), pp. 38–63, http://llt.msu.edu/vol11num3/cobb.
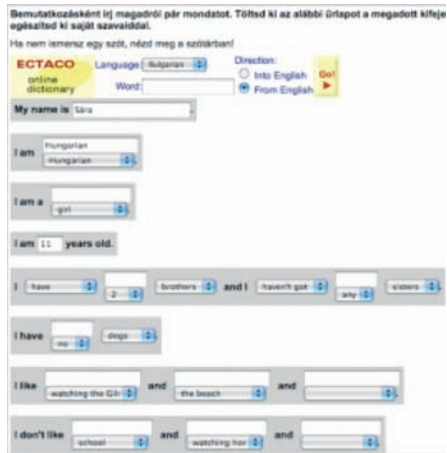
approach to social networking website profiles, the user is able to minimize their writing by selecting from a short list of alternatives highlighting common interests and hobbies, accessed through the mobile interface. Thus the activity is encouraged but not restricted by their difficulties.

In "Wordchain" learners create word chains illustrated by photos taken by their own mobile phones. The player takes a picture of an object (e.g. a red dress) which is published on the website via their mobile phone and the players tag them by using appropriate vocabulary learnt in previous phases: e.g. "red dress". Other players can continue the chain with another picture that retains one of the elements (e. g. a "yellow dress" or "red car"). Thus for each addition they only need to add one word. This helps develop the association between the concept (picture) and the written word in a collaborative environment.

Some activities use mashup features, such as a purpose-build "community" online dictionary to help students find out the meaning of new words more easily, and collaborate to enhance the dictionary. In another activity, the kids develop their own teaching/learning content to share with others, giving true/false responses to questions about photographs derived from the Flickr picture database. A more subtle and "combative" collaborative learning environment is "hangman" where players use their own mobile to challenge each other, irrespective of their location. The players take it in turn to guess words drawn from the project database.
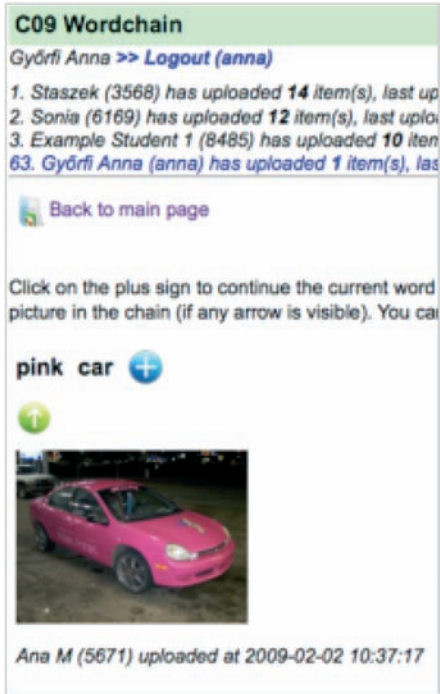
Pedagogical and Technical Aspects of Calldysc

The full range of activities in Calldysc includes solo games, synchronous two-player activities, as well as the web 2.0 activities. Teachers are able to monitor the students' participation in these activities through the Learning Management System which monitors results. Data collected include time of activity, final result, intermediate results. The students' progress can therefore be monitored. Note that it is more important to see the kids using the system, i.e. they are motivated, than the actual results. However, it was interesting to see that they were keen to learn, and showed progress in language acquisition. Clearly on-ly a longitudinal study would be able to show if the gains were long-term.

From a technology perspective, for easy of programming and wide-spread use and phone costs/availability, the Nokia range was chosen, with the N70 as the preferred device. These robust Symbian devices were a cheap option providing all the necessary features, from internet connect to accepting memory cards. The programming language was Adobe Flash, using FlashLite 2.0 which worked consistently across all devices. Other phones were also used provided they conformed to these specifications.

Results, Implications and Conclusion

Crombie, referring to the dyslexic second language learner, said that "We must ensure we are not imposing an unbearable burden that could result in further failure, demotivation and subsequent behaviour problems."[14] This project does not claim that the mobile phone is the answer

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[14] Margaret A. Crombie, "Dyslexia and the Learning of a Foreign Language in School: Where Are We Going?", *Dyslexia*, vol. 6, no. 2 (2000), pp. 112–123.

to teaching a second language to SEN children, nor that the difficulties that these SEN children find in the social network can be overcome with mobile phones and an appropriate environment. But children engaged in the activities, and wanted to extend their knowledge beyond what the project produced. Typical responses from the children were "The phone did not laugh at me when I made a mistake", "It was cool using a phone!", "Learning English has always been difficult for me and I hated it. This made it fun. Even if I was not good, I think I learned something", and "The only thing that made me keep going was that I hate not to win, but my friends did not see my scores". Clearly they appreciated that their failings were no longer under the watchful eye of their peer group, and given that they were not being judged against others, they appeared to like to show that, given time, they too could succeed. Parents acknowledged the desire for their kids to learn subjects that before had been a no-go area and were pleased to see the level of engagement. Clearly what is learned by the individual is paramount. But the new technologies and associated social networking means that we may have to reconsider the way we view teaching, its content, method of delivery, the role of technology, and the involvement of the user.

The smaller the gap between the way life skills will be used in learning and in life, the greater the chance of engagement with the learning, irrespective of the subject matter.

Traditionally one talks of a blended learning environment using computer assisted language learning (CALL) in conjunction with assistive technology and teachers to help dyslexic learners. Calldysc has demonstrated that using handheld mobile devices (currently regarded as phone but increasingly to be seen as mobile computers using blended technologies) can increase learning opportunities. But as Nicholls[15] comments, "Only pedagogical and access advantages will provide a lasting rationale for implementing eLearning approaches". Further quantitative data will be collected for this ongoing project, to confirm the qualitative results to date. Only if the evidence is clear that the effects of learning on the mobile are lasting will they be adopted more widely.

And the future of language learning for dyslexics? There is already an EU project (www.emime.org) that is looking to provide instant translation of language on a mobile phone. You speak into it, and it speaks out the translation using your own voice. Will that eliminate the need for dyslexics to learn a language? No, but it may help them develop social networks in an increasingly multilingual environment.

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[15] Nichols, *op. cit.*