

Becta Research Project 2007 - 2008

How to effectively enable independent access to a learning platform by children with cognitive learning difficulties

Summary

All the suppliers of Learning Platforms are starting from mainstream models, and there is a slow build towards adapting that product for SEN / SLD. The consequence of this is that opportunities for products which are accessible to learners with cognitive difficulties are severely restricted and the typical modification to an interface is to introduce graphics suited to a very young audience and/or avatars, but even in these cases generally the need to be literate remains very high. It is worth pointing out that the cognitive skills needed to understand that an avatar you choose is supposed to actually represent you, and perhaps your various friends, could be far more demanding for a person with learning difficulties than simply using photographs of yourself and those people. Using one Local Authority as an example, it would appear that the choice between suppliers on Becta's approved list comes down to an emphasis on mainstream technology rather than a discussion of the pedagogical qualities driving the design.

The five key elements that would appear to be required for a Virtual Learning Environment (VLE) to be accessible for children with cognitive learning difficulties seem to be:

- Simplified interface, ideally with the ability to customise it
- Symbols (Widget or PCS) embedded at every level
- Sound recording embedded at every level, navigable by graphics and symbols
- Scannable elements of the interface for switch users
- Large storage capacity for individual users to accommodate lots of video and other media

It should be possible for all of these options to be automatically triggered during the login process so that a user is taken to a version of the interface which gives them the highest level of independence in its use possible. It is very important to recognise that a product which met these criteria would not have to be a strange interface with a very limited audience, it would be a product which made the user experience better for anyone.

The process of tracking developments over the past year would seem to indicate that the opportunity to develop a product that meets the needs of users with cognitive learning difficulties has been missed, and that this results in less innovative products for the entire education system. The well-intentioned drive by government to provide every student with their own online learning space, and for every school to be running a Learning Platform, may well produce something adequate for the majority of users, but has probably squashed any chance for those in special schools to have the time and support to find well thought through products that suit their pupils' needs, and to be an active part of the evolution of those products into mature solutions which would eventually have real potential for mainstream schools as well.

With this in mind, perhaps the most important outcome of this project is to recognise that we have missed the boat with VLEs, and to look ahead and for Becta to anticipate the next major development and prepare advice to encourage products that begin with the learner with special needs.

Might the next big push be handheld technology? Although there are already many competing products in this market, very few have been designed for education, especially in terms of their interface.

One current product may well have huge potential for users with cognitive learning needs; Apple's iPod Touch combines a remarkably high quality screen with an extremely well designed touch interface, including some simple multi-touch features which could be learnt quite quickly by many pupils with cognitive difficulties. This and other touch devices suggest there is an emerging area to explore with interesting accessibility, and the fact that the user can customise the user interface seems well suited to allowing varying levels of simplified interfaces, especially if combined with the Software Developer Kit (SDK). Apple's SDK makes development of educational programmes and games a realistic possibility, and could enable a whole new generation to create a new version of the 1980's [Microelectronics Education Programme](#) which ran from 1980 to 1986, and sowed the seeds of much of what is still in use across UK schools today.

Findings

Early in 2007 I came across My People and Places, being developed by [CDSM](#) in Swansea, and I do have to say it was way ahead of anything else I'd seen at the time. Like any software, it was developing as it went along, so features like being able to choose contacts from actual photos rather than just text names (or the rather inadequate attempt to move in the icon direction of avatars) were still ideas to create rather than being demonstrated up and running. But definitely some very good thinking there, and the audience was based on adults with learning disabilities, so pretty well suited to the school population of people with cognitive learning difficulties.

<http://www.mypeopleandplaces.com/>

Recently, our school has had a chance to see UniServity and RM's Kaleidos. From what I've seen of UniServity they have already successfully integrated symbols (and you can apparently choose to use Widget, PCS, or both), have built in sound recording tools, and even a login option based on clicking a sequence of images as a 'code' that can be an approach instead of having to type a text string in. Whilst it is not yet not a really solid solution, it is nevertheless moving in a good direction. Apart from the focus on meeting the needs of people with learning difficulties, their general approach is very refreshing in terms of the emphasis on what they term 'connected learning communities' with really effective tools that seem to be pretty easy to use for the teachers in schools to make good educational use of.

<http://www.uniservity.com/>

Another platform with potential is StudyWiz, but at the moment they are not promoting any examples of what they've achieved so far in meeting the needs of users with special needs. I do think that they have a very healthy attitude to innovation, and do know that they've been in discussion with at least one LA to develop an interface/tools to meet the needs of users with learning difficulties.

<http://www.europe.studywiz.com/>

I think the work Inclusive are doing with Kowari is a powerful opportunity, combined with their business connection with RM now. At the moment, what I've seen of Kowari is that it offers a childish interface, and the messaging is still essentially grounded in the text world of email. What I would hope to see is that their collaboration with Inclusive can result in their expertise combining with deep SEN awareness to produce something we would all want to buy into.

<http://www.simica.com/news.php?id=2>

Becta's Learning Platform Services Supplier list

Core Projects & Technologies (UK) Ltd

Core list 14 case studies to give the viewer examples of how they have implemented Learning Environments in schools around the country. None speak of addressing the needs of users with special needs.

Etech Group

Etech markets StudyWiz as their Learning Platform. Their website gives no indication of features which support users with cognitive learning difficulties, and although there is a long list of schools using the product, it is not clear if any of those named are special schools. I am aware that at least one Local Authority have been in discussions with StudyWiz to adapt the interface for their children with special needs, but as far as I know this was being done more in line with the Primary version, which doesn't use universal symbols but instead has web designed graphics which require quite close attention to differentiate from each other.

Fronter

Fronter list 8 case studies to give the viewer examples of how they have implemented Learning Environments in schools around the country. None speak of addressing the needs of users with special needs. I have been in discussion with Mike Bulpitt about material he is writing for the London Grid for Learning aimed at introducing the product to their special schools. While this is an admirable aim, it once again underpins the lack of focus on users with special needs from the outset.

Netmedia Education

Netmedia is part of the Espresso Group. On their website they offer two distinct Learning Platform options, Primary and Secondary. There is no specific mention of users with special needs, or which solution they feel would be tailored for special schools with learners who have cognitive difficulties.

Pearson Education Ltd

On Becta's website Pearson describe their primary activity as that of "educational publisher in the markets of higher and professional education". Interestingly, they describe their Learning Platform as being powered by UniServity's online collaboration technology, a company also listed separately on this list of Learning Platform Services Suppliers. Although there is only a brief amount on Pearson's site about their Learning Platform offer, as it is based on UniServity this is described below.

Ramesys

The Ramesys website provides access to information about their Learning Platform, Assimilate, within just two clicks of their home page, and this takes the viewer into a well featured interactive environment with a clear interface where text combines with graphics to aid navigation, and it would appear that all of the features are described by video clips or voiced-over screen capture films. Essentially, a very promising way of making the process relatively accessible for a person with cognitive learning difficulties, while at the same time making it simply more interesting and informative for any user.

Unfortunately, these principles do not appear to have found their way into the Learning Platform itself, where most of the navigation is text based, and where images are used they are simply web graphics rather than conventional symbols.

RM Education plc

RM's Learning Platform is called Kaleidos. On their main website they have a list of tabs covering: Primary, secondary, BSF, authorities, further education, higher education, assessment and data, international, and finally home learning. Special needs is not listed at this level. On their opening screen for Kaleidos there are a changing range of 6 images cycling through 17 different topics such as "Inspirational Lessons", "Making Learning Personal" and "Every Child Matters". Special needs is not one of the 17 topics.

RM has however acquired a 25% stake in [Inclusive Technology](#), a significant company in supplying ICT resources for special schools and for catering for users with cognitive learning difficulties. Inclusive have begun marketing a 'Learning Platform for Special Needs.' Called [Kowari](#), the text on Inclusive's website refers to "Switch access, symbol support and other features are in the pipeline." As it stands at the moment, Kowari is aimed squarely at very young users, but it is certainly reasonable to expect significant development with Inclusive's involvement.

As part of our county's Learning Platform procurement process, our school welcomed an informative visit by RM to demonstrate their Learning Platform and to discuss what they had produced in terms of access and navigation for users with cognitive learning difficulties. Whilst the Learning Platform had some interesting features, they acknowledged that embedded symbols, non-text based use of sound recording and customisable simplification of the interface were not as yet features of their offer. A colleague and myself are due to visit RM towards the end of May to discuss their progress with developing such features.

Serco Learning Solutions (Serco Ltd)

Unusually amongst the suppliers listed here, Serco feature their current share price on the opening screen. Education is 1 of 11 options on this page, and Schools is then 1 of 5 options on the next page. On this third level, UK Schools is 1 of the 7 choices you are offered. This gives you just 3 key choices, with Skillspac being the relevant button to take you to your fifth level to read about the Learning Platform offer. The focus in the text on this page is personalised online learning space and integrated learning and management systems, tied in to meeting your obligation as a school to meet government targets. There is a text link for more information, but it just presents a contact form. It would appear that at no stage is there any reference to addressing the needs of the learners with special needs who may be in the schools and Local Authorities who sign up to this service.

UniServity

UniServity's home page may make them the only supplier to have any reference that could be perceived to include users with special needs. "Groundbreaking cLc Collaborative Projects link learners of all ages and abilities..". There are 6 prominent links on the home page, and clicking on "The cLc is transforming learning" takes you straight to a page where there is a reference to users with special needs: Under the title 'Personalised Learning' there is a sentence "The UniServity cLc helps individuals to satisfy their personal learning needs - and we have evidence that the opportunities it presents for collaboration, communication and discovery reaches dissatisfied learners, supports the gifted and the talented, and can help mitigate and meet learners' special needs."

UniServity came to our school to showcase their response to meet the needs of users with cognitive learning difficulties. Their thinking started from the login process, allowing users to select combinations of images, such that the correct sequence gave them access to their learning space. Once a user was logged in, for those who needed symbols to navigate around the environment, Widget symbols provided a familiar layer of communication which helped to get over the need for text based literacy skills. We were shown a simplified interface which reduced the confusion some users would face with the number of possible choices often found on a standard screen, although it was not clear just how easily this can be achieved. In areas where a student might wish to send a

message or a comment, the sound recording tool was available, and this used simple icons such as a red button to record and a green triangle pointing to the right as a play button. We did not have enough time to check that these supportive access features were totally embedded at every point of interaction which a user might need, but it was clear that amongst the 10 suppliers listed by Becta, UniServity seems to be the only one talking about and meeting special needs, including cognitive learning difficulties.

Viglen Ltd

On Viglen's home page there is a direct link to information about their Learning Platform. In their descriptive text much is made of the interface being intuitive and customisable "The intuitive platform allows everyone to master the technology in order to succeed with his or her learning activities." Despite this, the list of features for communication gives these examples "internal messaging system, e-mail, chat, SMS notifications, discussion forums, process oriented writing tools, notice boards and newsgroups." This list would almost certainly represent purely text based communication, and as such does nothing to address the user with cognitive difficulties who may not be literate. The schools shown in Viglen's list of 4 case studies do not refer to special needs and a special school is not present amongst them.

Discussion on Becta's SENIT email list

This has been a valuable source for tracking concerns and developments across the country in terms of VLEs, Learning Platforms and e-Portfolios. It is through this group that I have come across several of the sites featured below in 'Ones to Watch'.

Other notable messages have included Dave Mitchell of Worcestershire referring to the strong use of symbols within their package for assisting students with college transition, <http://www.transitionpathway.co.uk/>, Hertfordshire have employed Ann McDevitt, and independent ICT & SEN consultant, to advise on provision of a Learning Platform within their BSF work, Eileen Perrins noted that her county, Suffolk, are buying into UniServity, but at that stage she felt it had little to offer with regard to students with severe or profound and multiple learning difficulties (SLD/PMLD).

There was a long chain of comments on a thread about Inclusive's Kowari offering, I suspect largely based on the broad respect that Inclusive have as a company serving the SLD/PMLD community. David Fettes has raised an ongoing list of questions, often about the pedagogy that will underpin the use of a VLE in a school, and did get a couple of informed answers from Fiona Aubrey-Smith of UniServity and from Ian Bean of Inclusive Technology. It's well worth quoting Ian's response here as it is a comprehensive description of the situation we find ourselves in working with young people with learning difficulties:

COMMERCIAL INTEREST DECLARED

There are a number of possibilities you could look at David, some of which other colleagues have already described. I would recommend that you look at the broader issues surrounding what you are trying to achieve with regard to including pupils in the creation process and long term sustainability. ROAs mean different things to different people. For example I have seen them wholly paper based, brimming with teacher jargon and completely inaccessible to the children they describe. On the other end of the scale I have seen ROA quilts for profoundly impaired youngsters with individual pockets containing sensory objects that have real meaning for the child. These were hand sewn and embroidered and were lasting keepsakes for children with life limiting conditions. I'm not suggesting colleagues get their sewing machines out but simply that we consider what it is we want to achieve and how we can go about creating and managing something that has meaning for school & college staff, the child's parents and family and most importantly the young person themselves.

Quick and simple ways to achieve this might be through the use of programs like Powerpoint and SwitchIt! Maker2. I've seen many excellent examples of both. Both programs can take any combination of text, photos and video clips and with a little backward chaining and support, the young person themselves can have ownership over them and make decisions about what goes into them assuming they are at a level where they can make these decisions. ROAs and portfolios created in this way can be made switch or touch screen accessible too. I still remember a very enjoyable afternoon in a school in Scotland sitting with a group of children sharing and celebrating their many achievements with me. This system requires very little training for staff - and from David's previous posts I read that many of his staff are already familiar with both applications. Both programs have the added advantage of running with stand-alone players so ROAs can easily be copied onto a disk for parents etc.

Creating (and managing) a digital portfolio whether on or offline requires many skills that are often beyond children with SLD/PMLD. There have been a number of commercial products over the years, some good, some dreadful but all had complex user interfaces. In my school we opted for personal folders on the network to maintain portfolios of work and 'My School History' material. Not perfect by any means but manageable for our staff.

I have some reservations about the use of VLE / LP based ROAs and portfolios with this group of children. Sure, some of the open source offerings have accessibility features and much work has been done and continues to be done to enable switch access and accessibility for people with visual impairment. However I don't need to remind colleagues that switch access isn't always about being able to navigate the program by pressing a switch. Adding a liberal sprinkling of tab stops in Moodle or any other LP won't make it accessible to someone with severe learning difficulties. Neither will skinning with primary colours and cutesy graphics. The user has to be able to understand the interface, know what the buttons do if they are chosen, be able to navigate (or scan) into and back from nested menu systems AND be able to find files etc on the local machine to upload. In my experience this is way beyond the capabilities of many of the children I have taught over the years. We could do it all for them I guess but that defeats the object for me. Ideally I would like pupils to have ownership over their ROAs and portfolios and play a meaningful part in their creation. Staff using such a system would also need to be trained with all of the implications that would bring. The benefits of using a VLE /LP for ROAs and digital portfolios have already been described here. No VLE / LP will perfectly match what we need to enable this group of children and compromises will have to be made. Remember that the concept of LPs /VLEs came from higher education and has been 'adapted' to meet the needs of our primary schools.

There are Learning Platform products which will address some of the issues of accessibility for children with physical, cognitive and sensory difficulties experienced by many of the children you teach and Inclusive Technology will be rolling one out very soon, hence my commercial interest declaration at the beginning of this post.

Jocelyn Chappell referred to the use of Moodle within Buckinghamshire, where she teaches ICT at Pebble Brook school, for children with moderate learning difficulties. She is planning to share some of her work developing courses aimed at these pupils, and noted that Ian Usher, the county's e-Learning co-ordinator, is doing some work incorporating symbols into Moodle for the county's special schools.

Discussion on Becta's Leading Leaders' online community

There are several threads here relating to Learning Platforms, but nothing directly addressing the accessibility of the interface for users with learning difficulties.

Ones to watch

<http://www.honeycombtools.com/>

This is a new product from Softease, and appears to bring together an engaging interface with powerful Web 2.0 tools, although no specific addressing of the needs of many users with cognitive needs to have symbols rather than just bright graphics.

<http://www.mypeopleandplaces.com/>

This has been developed by CDSM specifically for people with cognitive learning difficulties, but is aimed at adults and leisure rather than children in schools. Symbols are thoroughly embedded, a sound recording tool is easy to use and available where needed. When I last saw it the company were working through the layers checking for consistency of thinking so that, for example, a contact list of names would in the future include photos to make choices quicker and more accurate. CDSM have been in discussion with Carol Allen in North Tyneside regarding the Learning Platform, and I may be visiting their base in Swansea again, this time with Carol to jointly discuss developments in the interface design.

<http://www.2simple.com/>

2 Simple have a good reputation for easy to use software, and have begun to develop their new Learning Platform, initially aimed at Reception and Key Stage 1 children from what I've been told. They have been working with Kevin McHenry in Northamptonshire to integrate the Learning Platform with the County's Sharepoint system, and the issue of addressing learners with cognitive difficulties is definitely in the LA's list of priorities.

<http://www.portland.ac.uk/>

Matthew Harrison has been working for some years on a project at this college to develop a switch accessible, symbolised VLE, including symbol based timetables and symbols for messaging called the Equal Project. Now, using TechDis funding he is one of several people working on a fully accessible portable e-portfolio aimed at adults with learning difficulties and/or physical disabilities. Dave Allen at Treolar College also reported that they are working on something similar, again with funding through TechDis.

Conclusion

The features commonly agreed between people working with children who have SLD/PMLD are as follows:

- Symbols (as in Widget, PCS, not just designer icons) embedded in the interface
- Scanning support, for switch users
- Clean and simple interface to reduce complexity without being unnecessarily childish
- Sound recording tool, available at any appropriate point (possibly a video tool as in YouTube)
- Intuitive steps for navigation right from the login stage through to tasks such as choosing a person to send a message to, or storing a piece of your work
- Large amounts of space in a user's e-Portfolio (for rich media)

It is clear from discussions with several developers that getting the thinking of how supportive tools like these work threaded right the way through a structure, rather than only existing on the first level, is one obstacle to tackle. As with any development process, it is easy to start out with good intentions that are not fully followed through, and it is essential that suppliers test their products fully in settings such as special schools to find out if they can really be used as intended.

It would seem that in terms of addressing the needs of people with cognitive learning difficulties UniServity are the front-runner within the list of 10 Becta-approved suppliers of Learning Platforms. RM may well have potential due to their stake in Inclusive Technology, who are marketing and influencing the development of Kowari. Meanwhile there are all sorts of developments happening any one of which could have a far better solution than either of these listed suppliers; CDSM's My People and Places has led the way, Matthew Harrison's work at Portland College is similarly starting out from the ground up thinking about users with special needs, and there are no doubt many other independent projects working towards very similar aims in a virtual vacuum with little communication, collaboration or feedback. Just the sort of thing a Learning Platform could help with!

Finally, returning to the rather negative point made in the Summary, that we have already missed the boat with designing Learning Platforms for people with cognitive difficulties, what is next for Becta? Their own report, 'Emerging technologies for learning', published in March 2008, concentrates heavily on interactive displays and next-generation interfaces. The report states early on that "In education, intuitive interfaces lower the barriers to using IT", but it mostly reports on large scale displays (such as [DiamondTouch](#) and [Microsoft's Surface](#)). It does also talk about interactive paper, but this relies mainly on established text literacy in the user.

In its conclusion the report says "Multi-touch and interactive surfaces are becoming more interesting, because they allow a more natural and intuitive interaction with a computer system." I think this statement is central to looking ahead, as on the one hand it makes it clear that an intuitive interaction is well suited to everybody (not just those with special needs), but on the other hand it begs the question, what constitutes an 'intuitive' interface? It seems to be the sort of thing we know when we see it, but can it be described and designed? Most of the examples of research talked about in the report are not educational at all, but relate to commercial settings with adult users. It is clear that there is a crying need for exploring the users who have the most natural approach to the use of technology, unhindered by previously learnt habits. These could be young children, and could well be children with learning difficulties as well.

Get it right for this population, and the chances are that you've designed a product that will be a natural hit with everybody.

Sean O'Sullivan
May 2008