vision

Looking at the future of learning

July-Dec 2008 **FREE**

The Children's Plan

What does it really mean?

Plus an interview with **Susan Greenfield**, neuroscientist, writer, broadcaster and member of the House of Lords

Robots in education

How might they assist with learning?

The right tools for the job

Creating interactive resources that appeal to learners

Compulsory education for +16s

Is it an opportunity to engage more young people in learning?

Primary schools for the future

We look at the challenges presented by the Primary Capital Programme (PCP)

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innovation in education

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About Futurelab

Futurelab is passionate about transforming the way people learn. Tapping into the huge potential offered by digital and other technologies, we are developing innovative learning resources and practices that support new approaches to education for the 21st century.

Working in partnership with industry, policy and practice, Futurelab:

- **incubates new ideas, taking them from the lab to the classroom**
- **offers hard evidence and practical advice to support the design and use of innovative learning tools**
- **communicates the latest thinking and practice in educational ICT**
- **provides the space for experimentation and the exchange of ideas between the creative, technology and education sectors.**

A not-for-profit organisation, Futurelab is committed to sharing the lessons learnt from our research and development in order to inform positive change to educational policy and practice.

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Welcome to vision

Since 2005, the enlightened and frankly brilliant Edge Foundation (www.edge.org) has kicked off each year by asking its heavy-hitting contributors to answer one question. This year, that question is: What have you changed your mind about and why? Changes of mind lie at the core of almost every breakthrough in science, art and thought. From Copernicus to Einstein, Leonardo to Picasso, James Joyce to Bob Dylan, lasting innovations rest on a rupture with the principles of the past. From the anti-slavery pamphlets of Thomas Clarkson to the global-warming movie of Al Gore, every significant social movement has been fuelled by reformers with changed minds.

The case studies highlighted in this edition of VISION show what is possible when you change your mind and approach challenges in radically new ways. Whether re-imagining learning spaces as part of the Primary Capital Programme or using technology to support self-directed, enquiry-based learning, the contributors here have broken with convention and challenged some long-standing assumptions around teaching and learning.

It is easy to delude ourselves in thinking that fixed goals, firm purpose and rock-like convictions are the path to success. I wonder if we're not sometimes at risk of confusing integrity, which matters, with inflexibility, which doesn't. Innovation is all about disruption and variation. The constant revision of doctrines and axioms is how cultures evolve.

And it is only through a fundamental revision, a profound rethink, of the nature, purpose and practice of education that we will be able to prepare learners for a world of significant economic, social and technological change. In this spirit of openness and flexibility, perhaps we should all ask ourselves what, in education, we might change our mind about in the coming year.

Finally, on the subject of change, we are adopting a fresh perspective here at Futurelab. I am delighted to hand over to Stephen Breslin as the new Chief Executive and wish him and the team all the very best for the future. While I hope and expect to change my mind about a great many things in the coming years, my support and enthusiasm for Futurelab - in its endeavours to stimulate, support and showcase innovation in education - will remain constant.

Annika Small
Outgoing Chief Executive
Futurelab

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It's all about vision

Building PRIMARY schools for the future

"You can take the teacher out of the classroom but you can't take the classroom out of the teacher." That was the thinking of one local authority employee engaging with the challenge presented by the 15-year, £7 billion Primary Capital Programme (PCP), which aims to rebuild, revamp and remodel 8,000 of England's 18,000 primary and primary special schools. But surely, if we are to take this opportunity to build learning environments that are fit for education in the 21st century, that's the crux of the problem.

In fact the classroom itself is increasingly seen as the final stumbling block to the imagination in both the massive Building Schools for the Future programme, aimed at redeveloping secondary schools, and PCP, which is already underway in 23 'pathfinder' authorities.

Most adults' experiences of learning have taken place in a classroom. But, for schools to re-imagine their learning spaces to meet the needs of today's learners, they have to face the challenge of thinking differently.

Professor Kenn Fisher is an internationally-renowned expert on designing learning spaces. Australia-based, he has been involved in ambitious school design projects all over the world and advises the Organisation for Economic Co-operation and Development (OECD). He sounds the death knell for the traditional classroom.

Visiting the UK recently to talk to school leaders involved in PCP (and BSF) on behalf of the National College for School Leadership (NCSL), he outlined his approach - namely to model learning spaces against pedagogy, and the kinds of teaching and learning that will take place within them. And he warned of the dangers of limited choices: "Unless you are careful you could end up with classrooms again," he says. "I just don't believe that classrooms are the way forward. For programmes like PCP I would hope that you would be looking at good case studies and best practice of alternatives to classrooms."

Fisher insists that the process for designing a new school, or remodelling an old one, has to start with a clear vision of the teaching and learning that takes place there, that can be shared with the designers and the stakeholders. "All the parties have to learn to speak the same language and fully understand each other. Only then can good design emerge to support the vision."

The challenge of developing that vision needs to be taken on by leaders, teachers, pupils, parents and other stakeholders - all working together, looking at case studies of innovative (and not so innovative) new school design. They should visit other schools locally and further afield, if necessary, to see what is possible - or avoidable. In an ideal world, the design process itself should become part of the curriculum.

Schools should not overlook the contributions of their own pioneering teachers, says Dr Elizabeth Hartnell-Young, Research Fellow at the University of Nottingham. "I think we need to recognise the innovation that is already going on.

Take the use of mobile phones in school, for example. Those on the ground are going to have to start making a stand and say 'we are dying to incorporate this into our future'. Now we have the opportunity to build schools for the future, we really need to be brave about curriculum and policy issues."

Sharrow School, an acclaimed new-build in Sheffield that amalgamated former primary and nursery schools, took five years to emerge and incorporated a great deal of consultation and stakeholder engagement. Headteacher Lynne Ley says, "We tend to be very tunnel-visioned. We get into our classrooms and something takes over us. It's really hard to shift your thinking, and I welcomed views from all the people who were party to the discussion of what a new school should offer. That was crucial in developing my thinking. You have to think about what teaching and learning will look like in the future. Think of how much it has changed in the last five years alone in terms of technology. I knew we had to link teaching and learning so much more to the development of ICT."

Her bottom line is that visioning should have no limits: "Our visioning did not include thinking about the brief. Don't be restricted by the brief - don't let that dominate your thinking. Think about that you want, your philosophy. And then think about how you can fit that into your brief. And don't be prescriptive."

Ley reinforces the point by urging others not to let their current and past working practices define where they want to be. "Put those out of the window and start with a blank sheet of paper. You need to believe that you have the ability to do that," she adds.

A good starting point is to come up with a small number of core ideas that encompass your strategy. Sharrow's were: changing learning spaces; inside-outside learning; the involvement of the community; and making sure that the building is open 24 hours a day and, if necessary, 52 weeks a year. "Doing this will give you not what you think you should ask for but what you never dreamed you could have," explains Ley.

Sharrow's experience is shared with its 'construction buddies' and the rest of the world at 'Brix and Morta', a blog written by those involved in the project over two years to give a sense of the journey they went through.

The visioning process should not be different for schools that will be remodelled rather than rebuilt, no matter what compromises eventually have to be made, urges Mike Schofield, Head of Haxby Road Primary School in York, who chairs the NCSL's think tank on PCP. "If you are remodelling it is even more important to start with a vision of teaching and learning because, if you don't, all you will get is a lick of paint, new desks perhaps, and nothing much else will have changed. You certainly won't get transformation. To get that, you have got to be prepared to take risks."

Hannah Jones, Director of the PCP and BSF leadership programmes for the NCSL, thinks that schools are getting better at avoiding off-the-shelf school designs: "Local authorities and school leaders have the opportunity to completely rethink their educational provision and learning environments," she says. "At school level the first and most important question to ask is 'what sort of learners would we like?' It's a question to share as soon as possible with all staff, pupils and the local community."

The second, she continues, is: "'What environments, both physical and virtual, will deliver our aspirations for learners?' We should not forget that 743 new primary schools have been built since 1997 and we should learn from their experiences, insights and cautions - their problems as well as their successes. At local authority level there have been 23 PCP pathfinder authorities, and many more that have been involved in the Building Schools for the Future (BSF) programme are now building on their experiences and linking their work on BSF with PCP."

Addressing local authority staff at a recent NCSL conference for those involved in PCP pathfinder schemes, Futurelab Research Director Keri Facer summed up the point about developing a vision, telling them: "When we are thinking about technology, can I predict what is going to exist in 15 years? No. But it's not about that at all. It's about understanding the trends, the ways in which we work and learn, and the sorts of general currents of development in the future."

"We tend to be very tunnel-visioned. We get into our classrooms and something takes over us. It's really hard to shift your thinking"

She concluded with a challenge: "I am looking for a school to join me in a school-design experiment. What would a school look like if we thought of learning as missions, if we thought of the headteacher as the chief wizard? How might that metaphor give you a different way of thinking about what you are doing in your school spaces - and I am not talking about the technology but the ideas. What would a school designed as a game look like?" It was heartening to see that her imagination was matched by the school leaders present - yes, she had takers. Let's hope that they keep that game in mind when redesigning or rebuilding their own primary schools. Watch this space...

Further information

_ 'What if...? Re-imagining Learning Spaces': **www.futurelab.org.uk/whatif**

_ Fountaineers: **www.futurelab.org.uk/projects/fountaineers**

_ A video interview with Kenn Fisher, and the presentations he made during his March 2008 visit to the UK are available on the NCSL website: **future.ncsl.org.uk**

_ Rubida Research: **www.rubida.net**

_ Work with the Victoria State Government including a case study of The Australian Maths and Science School: **www.sofweb.vic.edu.au/knowledgebank/pdfs/linking_pedagogy_and_space.pdf**

_ Details of the NCSL Leadership Programme for BSF and PCP: **bsf.ncsl.org.uk**

_ Elizabeth Hartnell-Young: **www.nottingham.ac.uk/lsri/ehy**

_ Brix and Morta - Sharrow School construction buddies blog: **sharrowconstructionbuddies.blogspot.com**

_ Sharrow School: **www.sharrow.sheffield.sch.uk**

_ 'The Language of School Design: Design Patterns for 21st Century Schools', by Prakash Nair, available from Amazon

"What would a school look like if we thought of learning as missions, if we thought of the headteacher as the chief wizard? ...What would a school designed as a game look like?"

Technology update

They range from logical developments to tests of your credulity, but be assured, all the items in our technology round-up are underway and, one day, we may well be using them in one form or another...

Social networking goes 3D


Vivaty

Users of the social networking site Vivaty will get access to a virtual room that they can decorate to their taste, adorning it with photos and posters, and set the atmospherics and entertainment to their liking. Having done all of that, users can invite friends over to join them to enjoy their online lifestyle, speaking to them 'in person' via 3D avatars. Start-up company Vivaty from California hope that by offering more than a web page that can be filled with photos and a list of hobbies, many more of us will be tempted to try out social networking. Vivaty will be offered to Facebook users this year.

www.vivaty.com

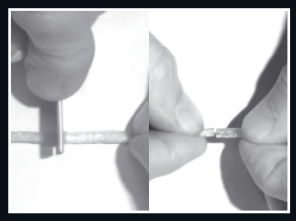
Up, up and away!


Dr Joesph Cory and Dr Pini Gurfil

Giant solar energy balloons floating high in the air could offer a cheap way to provide electricity to areas lacking the land and infrastructure needed for traditional power systems. Designed by Dr Pini Gurfil and Dr Joseph Cory at the Technion Institute of Technology in Israel, the helium-filled balloons are covered with thin solar panels and connected via a wire cable to an inverter, which converts the electricity into a form households can use. The scientists say that the balloons' circular shape ensures they always receive direct sunlight and are not affected by the sun's position or tall structures.

pard.technion.ac.il/press/PressrelE.asp

Putting Humpty-Dumpty together again


ESPCI

"Children are always breaking their toys. Wouldn't it be nice if you could put them back together so easily?" These are the words of Dr Ludwik Leibler from the Industrial Physics and Chemistry Higher Educational Institution in France, whose work could make this possible. They have developed a new material that is able to self-repair, even when it is sliced in two. This artificial rubber produces surfaces that retain a strong chemical attraction to each other when cut - and so they join together without the need for adhesive. The material was developed with the support of the company Arkema, who is investigating whether it can be turned into a commercial product.

www.mmc.espci.fr/eng/welcome.htm

Step towards optical logic and computation

Since light can carry a lot more information than an electric current, the race to develop an 'optical computer' has been on for some time. Research at the University of Bristol is developing the fundamental building blocks for such a computer, which would store and process digital information as light, and so massively outperform today's PCs. The IOLOS project works on the principle that a device called a semiconductor ring laser will emit a laser beam in only one of two directions - clockwise or counter-clockwise. This means that, when looking at output from one direction, you would either see 'light' or 'dark' - representing '0' or '1' in a digital system.

www.bristol.ac.uk/news/2007/11727869025.html and **www.iolos.org**

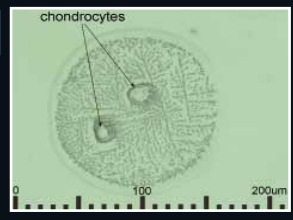
Playing with your emotions


Emotiv Systems

Neuro-engineering company Emotiv has developed a headset that could enable you to use your thoughts and feelings to play computer games. "It picks up electrical activity from the brain and sends wireless signals to a computer," explains the company's President Tan Le. The headset, known as the Emotiv EPOC, is essentially a brain-computer interface that reads electrical impulses in the brain and translates them into commands that a video game can accept. Headsets which read neural activity are not new, but this device doesn't require a large number of electrodes or a technician to operate it - it will also retail at less than $300, making it suitable for home entertainment applications.

www.emotiv.com

Need a heart transplant? Just print one off...



University of Manchester

Scientists at the School of Materials and the School of Pharmacy, University of Manchester have utilised the process of ink-jet printing (where liquid substances are squeezed through the print-head in a precise pattern) to create patterns of biological cells - printing in layers enables them to create three-dimensional structures. Structures need materials around the cells that will support and sustain them, mimicking the function of real tissues. These 'ink-jet tissues' could provide new cell-based materials for drug testing, sensors or fuel cell–type batteries, and in future it is hoped that this technology could lead to engineered replacement skin and bone, or possibly even more complicated organs.

www.ukctr.manchester.ac.uk/ourresearch/researchtopics/materialengineering

South Downs Learning Centre

Education for 16+: Brave new world or old frontier?

The Government's decision to make it compulsory, from 2015, for children to stay in education or training until they reach 18 has not been universally welcomed. However, if raising the school leaving age to 18 means that we can be flexible about what is involved in this compulsory education - so that we can offer greater choice for learners - is it an opportunity to engage more young people in learning?

The thinking behind the Government's decision was clear: the number of unskilled jobs is shrinking and, if young people are to find jobs, then they need to acquire the appropriate skills to do them. Furthermore, it was considered that the UK will only be able to compete successfully with rapidly growing economies such as India, China and Russia if it has a highly skilled and competent workforce. The 2006 Leitch report, commissioned by the Government, found that one in seven adults are not functionally literate, while nearly half have difficulty with numbers. The report proposed an ambitious target of making the UK a world leader in skills by 2020.

But is making education compulsory the best way of achieving this? As Ann Hodgson, Reader in Education at the Institute of Education, puts it: "Successful learning doesn't take place in situations where people are forced into learning. The idea of having sanctions against young people who are unwilling to undertake training is a thing that most educators would baulk at."

However, viewed from an alternative perspective, educationists may feel differently. If, for example, the change in 2015 could result in two years of free study chosen and directed by the learner, and if that study was not necessarily based inside a school building, then raising the school leaving age might be viewed as an exciting

new development. So is there a way that compulsory education and training for 16-18 year-olds can be made to work?

The Government argument is that young people won't have to stay on at school: they will be able to take jobs, as long as those jobs include some element of training that leads to a qualification - even if that training involves just one day a week at the local further education (FE) college.

"Sanctions against young people who are unwilling to undertake training is a thing that most educators would baulk at"

While some students will carry on doing A-levels, some will study for National Vocational Qualifications (NVQs), and others will enrol in the new 14-19 diplomas.

These diplomas offer the opportunity to study broader topics and are more closely related to the workplace than traditional, perhaps more academic, A-levels. There is, however, a good deal of scepticism about whether students will want to study for the diplomas while A-levels still exist, especially since the Government announced that it still regards A-levels as the "gold standard". "However world class these new diplomas are going to be, they're not gold, and who's going to choose that? That's why schools aren't going to go for them," says Pat Ainley, Professor of Training and Education at Greenwich University.

But alternative approaches that engage learners' interests more directly are being tried. One example is the Learning and Skills Council's Increased Flexibility for 14 to 16-Year-Olds programme, in which FE colleges and schools have formed partnerships that allow students to study outside school - at a college or with a training provider - for one or two days a week, to work towards vocational qualifications. Early indications are that the scheme is doing well, with good attendance and low drop-out rates.

Creative Partnerships, which is part of the Arts Council, takes the view that young people need to experience learning in a way that is more 'real' to them. It funds partners who can work with school pupils to engage them in learning, and those partners can come from all walks of life, whether it's the arts, science or business. Paul Collard, National Director of Creative Partnerships, points to one example where a school whose Year 7 students were disinterested in their geography lessons about the rainforest were given one day a week to work in a local firm that produced educational software. Working in teams of three, the children produced interactive learning materials that made the rainforest topic more interesting and relevant to them - and they were expected to work to budgets and deadlines. "The only way they could do it was by learning everything about the rainforest, which they did. But because they were so busy designing their interactive learning materials, that's what they focused on. By the end, however, their knowledge of the rainforest was fantastic," Collard enthuses.

The South Downs Learning Centre in Sussex provides self-managed learning programmes for children who do not, as founder and Director Ian Cunningham puts it, find school "congenial". The centre encourages students to work together in groups of six, in which they can support each other. The students set their own goals and design their own programmes of learning. In one recent example, 13 year-old students wrote their own proposal to raise money from the Scarman Trust for sports equipment, cookery materials, gardening materials and suchlike. "They've had to do the research, generate the budget, come up with sensible ideas, and make a proposal to a funding body - they've done it all themselves," says Cunningham. The students were praised for how well they had planned their proposal and they gained 100% of what they asked for.

These projects are all small-scale, however. But technology could be the key to enabling a much wider group of students to take control of their own learning. We are already seeing greater use of new digital technologies that enable learners to work together in new ways, forging links with others with similar areas of interest and with experts in their chosen field. Video-conferencing, instant messaging, blogs and wikis are all technologies that enable students to learn at a distance, to collaborate with others and to work more as co-learners with their teachers.

Tim Rudd, Senior Researcher at Futurelab, agrees: "Digital technology could help to facilitate a more diverse way of learning that enables learners to develop skills that are relevant to their lives outside of education, take on responsibility and be active in developing their own learning."

The Building Schools for the Future (BSF) programme has been working with private

South Downs Learning Centre

partners such as Microsoft to address the question of how technology can be used to engage students more effectively, with some success.

"Technology can help you individually personalise the curriculum you're delivering to reflect individuals' interests," says Steve Beswick, Microsoft's Education Director. "The world is shrinking as a result of technology and people can access each other a lot more quickly and easily." Instant messaging for example, says Beswick, can enable students in Britain to communicate with other students all over the world and ask them questions about their own country or talk to them in their own language.

An example of how this might work in practice is Wolverhampton's Virtual Workspace, which has enabled 12,000 secondary school pupils to access learning materials both during and outside school hours. They are able to use instant messaging to communicate with each other and to ask questions online of mentors - mostly teachers, or ex-teachers, from outside the local authority, who are able to support the students and help them with topics they are having difficulty understanding. Students can work where they want, when they want, and those using the Workspace have been more successful in their examination results than those who haven't used it. "It's moving away from a didactic approach that says 'I am the fount of all knowledge and I will give you the facts that you need', to becoming more facilitative in approach," says Gerard Stone, BSF Programme Manager in Wolverhampton.

But should we be concerned that offering these alternative approaches to learning to school leavers is throwing them - unprepared for a world of choice - somewhat into the deep end? Donald Clark, a Director of the University for Industry (UfI), argues that it is unreasonable to expect students exposed to traditional teacher-centric methods of learning up to the age of 16 to be able to cope with independent learning from the age of 16 onwards.

Rather than write the idea off because of this, maybe we should take this opportunity for change for post-16 learners to introduce greater choice for younger learners too? So that greater choice and more authentic learning and working experiences can act as a model for those aged 16 and under.

Hodgson agrees: "You need to have a much more engaging general education from 11 onwards, so you don't encourage so many people to leave the system. So you focus much less on examinations and much more on what people are learning."

So, it would seem that, if we are brave, we could be at the dawn of a new era - one where a learner-centred approach, facilitated by technology, to offer greater choice becomes the norm not only for 16-18 year-olds, but for all learners. Pockets of good practice, such as Wolverhampton and the South Downs Learning Centre, have shown the way forward. Now we need to take the bull by the horns and universally apply such models of learning.

It is unreasonable to expect students exposed to traditional teacher-centric methods of learning up to the age of 16 to be able to cope with independent learning from the age of 16 onwards

Using mobile technology to engage 16+ learners

MobiMissions is a location-based, social, mobile phone prototype project from Futurelab aimed at young people aged 16-18. It enables players to engage with their environment and community in new ways as they create 'missions' (games and tasks) on their mobile phones, which they can then 'drop' in locations around their city, to be found, and responded to, by other players.

For further information and a full report, go to **www.futurelab.org.uk/projects/mobimissions.**

The Children's Plan: Emerald City or black hole?

The rainbow comes laden with positive associations: the harbinger of calmer atmospheric conditions; Dorothy's route to wish-fulfilling lands; the pointer to elusive hidden riches. So it is highly appropriate that just such an atmospheric wonder should feature as the cover illustration on the Children's Plan published in December 2007. Or is it? We ask those who work closely with children what the Plan really means to them now that they've had a chance to digest it...

At the very beginning there was a potential bad omen around this DCSF rainbow, lacking as it does a band of indigo. Amused journalists quizzed Education Secretary Ed Balls about this omission at the launch-day press conference. He thought pink was missing. Insignificant? Colour therapists would have us believe that indigo is the prompter of balance, calm reflection and unity - and clearly these ingredients are going to be needed in abundance over the next few years to turn the myriad aspirations in the Plan into reality.

Rainbow hues aside, the launch was an occasion for Ed Balls to signal the arrival of his newly formulated, cross-governmental department with a set of principles, proposals and promises firmly focused on the lives of children and their families. "This was the first major manifestation of the kind of joint working the new DCSF hopes to engender," suggests education expert Chris Waterman speaking on behalf of the Association of Directors of Children's Services about the Plan. "A mirror of the kind of joined-up working that has been increasingly a feature of the local authority landscape with respect to children. It painted its hopes for children on a vast canvas with something there for most stakeholders and the kind of 'wriggle room'

that enables room for manoeuvre that might be necessary further down the road."

Less charitable responses have described the publication as a departmental policy dumping ground rendered indigestible by tombstone slabs of text, a lack of flowcharts and index. Despite these handicaps, the document has now been thoroughly perused and the specific initiatives it promises are in progress or imminent. But, still very much in its infancy, what do key players make of it? What do they have to say about the good, the bad and the ugly it contains, and the kind of transformations they hope might spring from it, given its overarching commitment to make this country's children among the happiest in the world.

Play

High among the headlines were the Plan's promises to spend big money on improving children's facilities for play, including £225 million allocated over the next three years to build or upgrade public playgrounds and construct some 30 new adventure playgrounds in deprived communities.

Somewhat muted music to the ears of Play England's Director Adrian Voce: "We are waiting to see the publication of the National Play Strategy this spring, hoping that the push goes beyond just smartening up park playgrounds. What we are hoping for are signs that children are truly going to feature as part of a broader decision-making strategy - particularly concerning planning, which has traditionally resisted seeing young people as sharers in public space." Voce points to Holland for inspiration, where there is, he says, a different attitude and where designating an area as a 'home zone' goes far beyond merely reducing speed limits to 20mph - as suggested in the Plan. "There the provision of well-protected centralised parking areas and more serpentine design of roads have helped remove vehicles from roadsides and taken traffic-calming measures beyond speed bumps, with all their knock-on ills in terms of the higher polluting slow-down-and-accelerate driving they encourage."

Voce is not alone in appealing for a more creative approach to designing play areas. Barbara Chillman of the consultancy Learning Through Landscapes underlines

"What we are hoping for are signs that children are truly going to feature as part of a broader decision-making strategy"

the need to think more broadly than providing equipment and concerns about health and safety that perpetuate the creation of facilities that children invariably find uninspiring. She suggests that the focus should be on broader environmental design - parks, for example, in which play opportunities are scattered rather than 'fenced off'. "More can be achieved in terms of children's imaginative play by landscaping and putting in some boulders," she says, "than with a vast spend on rubberised surfaces or standard playground equipment. There is also a huge need to give children spaces in which they can learn about risk - particularly in school playgrounds."

And therein lies a problem for the Children's Plan, suggests Chillman, who says that references to playgrounds in the Plan do not encompass school playgrounds, as they are supposedly receiving their boost thorough the Building Schools for the Future (BSF) programme. "However, the evidence is that the environment surrounding schools is often receiving scant attention, with little willingness to engage in the kind of consultation with the end-users, the children, that is likely to create the spaces they'll enjoy or find stimulating." Of course, such consultancy is time-consuming, but examples of good practice shine through, such as at St Mary's Primary School in Gillingham, where the vision is to move 50% of the lessons outdoors, and children's ideas have directly informed the decisions of the Grounds Steering Committee made up of staff and parents.

Happiness

The Children's Plan is clearly informed by reports (such as the 2007 UNICEF findings on childhood in industrialised countries*) suggesting that the UK's children are among the unhappiest in the world, and a thorough review of Children and Adolescent Mental Health Services (CAMHS) is promised. "There is a great deal of common sense stuff in there," comments Dr Andrew McCulloch, Chief Executive of the Mental Health Foundation. "But in many ways the Children's Plan is too full of 'motherhood and apple pie', with little in there really tackling the contribution that the pressures in our existing education system make to the anxiety our young people are experiencing." He adds: "The promised review of CAMHS looks as if it will be too narrowly focused - failing to look at the ways in which better integrated services can result in vastly more nuanced and effective use of what are always highly limited resources."

McCulloch has in mind the Saucepans service in Southampton, where a team made up of a wide range of professionals ranging from sexual health workers, social workers and health visitors are available for young people registering Level 2 on the scale of mental health need. "Most services cater only to the most distressed youngsters with Level 3 measures of ill-health," says Southampton Strategic Lead for Primary Mental Health, Stuart Gemmell. "Here we can offer short waiting times and brief interventions - six sessions typically, enough, if provided early, to stop young people deteriorating further." Contrast this with the six-month-to-a-year waiting lists for first appointments in most other parts of the country. Saucepans - so named for the mixed-pot of expertise it can muster - is also well placed to see young people's mental health difficulties in a broader context, offering aid and advocacy

All images: Play England

that embraces everything from parental counselling to housing advice. "Thanks to Saucepans only the neediest children are referred on to full CAMHS," says McCulloch, "which is far less stigmatising for the rest who can benefit from the kind of subtler and speedier support they need." At present, he points out, there's nothing in the Children's Plan to suggest that innovative models of support like Saucepans will be encouraged to proliferate.

Learning

At the Training Development Agency, Chief Executive Hilary Emery sees the ever-upward numbers of extended schools - over 9,000 at the last count - as a key element in the delivery of the kind of varied and enjoyable school life promised in the Children's Plan. "The Plan is also entirely in keeping with the Every Child Matters agenda and the recognition that there can be no progress for children academically unless their well-being is cared for," she adds.

The innovations planned at Quintin Kynaston in North West London are consistent with the Plan's vision of schools as hubs for swift and easy access to services and support. "We were the school originally chosen to launch the Extended Schools programme pilot," explains Headteacher Jo Shuter, referring to the Government's scheme, launched in 2003, to enable pupils to attend breakfast clubs and after-school activities. "Now we have reached the point not only of seeing a wide range of services embedded in the school, but of preparing to run our own supply agency for teaching and other social services personnel, while alongside that providing accredited training for health, family and teaching staff in-house, with our own classrooms and youth club being their proving ground."

At Quintin Kynaston, unsurprisingly, student voice is hugely valued too - again in keeping with the call for students' greater involvement and consultation in the Children's Plan. "There is a lot of lip service paid to this matter," says Head Prefect Aziza Ajak, "but here students are involved in every aspect of the school, from having places on the governing board, being encouraged in the sixth form to become assistant youth workers, and even being trained up to conduct lesson observations." Meanwhile, a leadership group of students parallels the staff leadership team - its current focus being a thorough review of the teaching of sex and relationships.

Less popular with Shuter is the notion of 'stage not age' testing suggested by the Plan - the notion that teachers will now have the flexibility to recommend students for national evaluations when they are deemed ready for them. Perhaps she would find developments at Writhlington School in North Somerset more palatable - where Headteacher Marie Getheridge has already overseen the creation of accelerated programmes of Key Stage 3 and 4 study for the brightest students, which ultimately offers them the space to pursue additional courses and participate in the school's extensive enterprise programme - including the by-now internationally famous orchid business where the school has converted a girls' toilet into an orchid breeding lab, running it as an international business and conservation project supplying the likes of the Eden Project.

Also of great significance, particularly for learners that feel excluded from the education system, is the fact that the Children's Plan contains a commitment to reducing educational inequalities, placing a duty on schools to "achieve a situation where children... fulfill their potential and succeed at the highest levels possible, with no barriers to access and participation in learning and to wider activities, and no variation between outcomes for different groups".

Such optimism is offset somewhat by Dr Belinda Hopkins' regrets concerning what she feels is the punitive model of behaviour management in the Children's Plan. Her organisation Transforming Conflicts is a prominent advocate of restorative approaches, and Hopkins is sorry that these receive their only mention in the Plan as part of those sections dealing with the criminal justice system. "I regret seeing the faith that the Children's Plan places in the recent Steer's Report concerning behaviour for learning, which was hot on punishment and sanction and very weak on the need to turn our schools (and families) into places where restitution following conflict is embedded - and not just for children. It needs to apply to parents and teachers too."

Technology

For most commentators, the Children's Plan lacks a specific reference to the use

of technology in the classroom - if you exclude its recommendation to ensure that the internet is used safely. "The biggest concern for schools, given the ever-broadening access to the internet and school virtual learning environments through mobile technologies, is how to help young people make the best use of all that is available," points out O2's Vice President of Research and Development, Mike Short. It is a concern echoed by the likes of Andy Preston, Managing Director of Edujam, whose primary learning platform places strong emphasis on student choice. "At Clunbury Primary School," he explains, "the children are able to publish and share everything from conventional stories to animations and podcasts, so encouraging their creativity." The story is taken up by Clunbury Headteacher Andy Davies: "Through publishing their work on the internal network, our pupils can open up their work to others in the school community, giving them a sense of pride and satisfaction. This means that, as well as using their own resources, teachers can use pupils' work as teaching tools - which is a fantastic way of promoting high levels of achievement." However, the lack of a specific reference in the Children's Plan to the use of technology like this should not prevent those of us involved in education using it to support innovation in the classroom.

Parents' role

The mantra that parents should be engaged as partners in their children's learning is one that is valuably championed in the Children's Plan. It reflects the experience of schools that, while achieving initial big wins through improved teaching and learning, frequently see their children's attainment plateau unless their parents are brought on board as partners in the education process. At Quintin Kynaston they recruit a number of parents with strong community profiles to act as outreach workers. A similar model has just been trialled in Barnsley, in early years settings, with a group of six parent champions working alongside Sure Start and Nursery staff, both promoting and delivering sessions aimed at children whose progress is a cause for concern.

The work, while boosting the confidence of the parent champions immeasurably, has underlined for them the extent to which early years settings have failed to see them as key allies in their children's learning in the past. It has, moreover, highlighted those settings where their reception as part of the project was decidedly lukewarm.

In the West Midlands, Gordon Lee, Director of the Malachi Trust - a charity offering counselling to children and families alike, their needs identified and their initial suspicions allayed through the staging of special in-school musicals - sounds a further cautionary note: "The Children's Plan may call for full engagement with the third sector, but the reality is that where charities are deemed to be competing with local authority provision, the resistance to true partnership can be immense."

So you can see that the Children's Plan does indeed seek to be wide-ranging and, it would seem, there are both positive and negative things to say about the detail. However, among commentators there is a broad agreement that one of the great virtues of the Children's Plan is its setting a number of positions firmly enough for the teaching profession and the other agencies focused on children to know what they should be attempting to do. Perhaps it's true, as indicated by many of the commentators in this article, that there are some omissions that could undermine its aims. But perhaps what is more significant is whether or not we can all rise to the challenges set by the Plan, implementing projects and solutions that lead to a nation of happy, healthy and fulfilled young - and older - people.

"The resistance to true partnership can be immense"

***The UNICEF report on childhood in industrialised countries can be found online at www.unicef-icdc.org/presscentre/presskit/reportcard7/rc7_eng.pdf.**

All images: Play England

Tomorrow's world

Professor Baroness Susan Greenfield is a neuroscientist, writer, broadcaster and a member of the House of Lords. She is currently Professor of Synaptic Pharmacology at the University of Oxford as well as Director of the Royal Institution and Chancellor of Heriot-Watt University in Edinburgh. Her work includes the book 'Tomorrow's People: How 21st Century Technology is Changing the Way We Think and Feel' and it has attracted much attention in the media - where she has been mainly represented as being fearful of what the future and technology might bring for the human race. Here, through an interview with Futurelab Learning Researcher, Richard Sandford, we delve a little further into her views...

VISION: In your work, particularly at the end of your book 'Tomorrow's People', you seem to give the impression that you are worried that technology - and in particular screen technologies - will remove our ability to think for ourselves. Would that be fair?

SG: As a broad-brush generalisation, yes. I'm aware that much can be gained from working with screen technologies, but what concerns me is if children are interacting with the screen in an unsupervised way. It's not so much that I think screens are bad, but that I think we're not harnessing them to their full potential. I'd like to draw a distinction between process and content - currently it seems that there's too much emphasis on process at the expense of content and meaning. Focusing on how you reach a particular goal is very different from understanding the significance of that goal in a world where you can draw on huge numbers of resources. As for the emphasis on screen technologies; they're the most pervasive interface technology at the moment, although other 3D technologies - such as brain implants, nano-technological devices, smart technologies and interactive computing in clothing - may dominate in, say, 10 years' time.

VISION: In your speech to the House of Lords on 20 April 2006 on 'Education: Science and Technology' (text available from www.publications.parliament.uk/pa/ld199697/ldhansrd/pdvn/lds06/text/60420-18.htm), a concern seems to be that children don't have the knowledge and skills required for successful living in the 21st century. Given that the world is changing incredibly rapidly and that we now have unprecedented access to information, how do you think education needs to change in order to fit learners' needs?

SG: The first thing is that, as far as I'm aware, there's no consensus on what we want children to learn. We need to decide what we want to do, what will best equip young people to be citizens of the 21st century. Most people would feel unhappy about us adopting the values of the 20th century. I think things have changed so much that we really need to address the issues of what will make for the best education in today's world. What do we want people to learn? What do we want them to be? My own bias, being a 20th century person, is that I like to think of individuals gaining fulfilment, reward and satisfaction out of seeing connections and understanding things. My own view is it's a very rewarding aspect of human nature to be able to do that.

VISION: What do you imagine parents want from their children's education?

SG: If I was a parent, I'd want my children to feel fulfilled, I'd like him or her to be a worthwhile member of society, so that whatever they did or were trying to do was useful to people. I'd also like them to have a sense of their own identity; to be individuals. But what kinds of skills will give people that? It's too much of a leap of faith to think, if you just train children to interact with computers efficiently, that all those things will happen automatically; I don't think they will.

VISION: Your work talks a lot about technology being a potential threat to our sense of individuality. You have this concern that the personal ego is something precious that we should hang on to and protect from threats; as something that is under pressure perhaps from change.

SG: Your sense of privacy is closely tied in with your sense of identity because your sense of identity, your private ego, is something that no one else can hack into or encroach upon. It's something that you show to the world as much or as little as you want, in the version that you want. But if that becomes transparent, as schizophrenic patients often experience, then people feel very unhappy because their individuality is threatened. We need to look very carefully at how we can preserve that notion of privacy.

VISION: My final question is: Where does the brain end?

SG: It depends on what criteria you use. I very much believe in the embodied brain, not the disembodied brain - as something that interfaces with the rest of the body, and interacts in the cohesion that we call a person. But I also agree with the concept that, since we are connected to a network via screen technologies, that individual's ideas are distributed and developed among the different nodes. So, in a sense, one could say that that brain has extended throughout that network.

The right tools for the job

(and the right co-workers)

Creating interactive tools and educational experiences that learners find truly engaging is still regarded as something of an elusive art form. Many attempts to create solutions to assist learning, from software packages and architectural installations through to community projects, have proven less than effective. What can we do to remedy this?

One of the best ways is to involve learners in the design and development processes of tools, resources and projects. There are a number of design approaches in use today that claim to engage learners, but most only pay lip service to this philosophy. They don't actively employ learners as co-designers from the beginning to the end, and this is reflected in the quality of the outcome. The trick for all of us (for this applies to anyone involved

All images: Bold Creative

in designing learning activities, including developers, teachers and project leaders) is to involve learners from the outset, as co-designers.

Trust, honesty and transparency
The people who will work on the project (learners, developers, teachers, youth workers and others) are clearly of key importance. The team must work together seamlessly, so honesty and transparency are easily the greatest assets at their disposal:

- Communicate the project's aims clearly and develop them together as a team. It's surprisingly easy for team members to get the wrong idea of what the project's achievements and aims are supposed to be.

- Make the project's constraints clear. Budgets, time constraints, resource limitations - all these need to be known upfront. There's nothing worse than realising that you have all wasted valuable time and resources chasing the impossible.

- Trust and respect each other. Yes, this is a cliché, but it remains valid: trust and mutual respect are the hallmarks of a good team.

In electronics, communication quality is defined in terms of its 'signal-to-noise ratio'. The more signal, the better and clearer the communication. The more interference and noise, the harder the communication becomes to understand. Ultimately, the team needs to be able to communicate without any interference and so the lines of communication need to be kept clear at all times.

Listening: the art of communication
Like learning itself, design is fundamentally iterative, with a series of discoveries, each being used to decide what needs to be discovered next. Working with learners right there in the design team makes this iterative process of discovery easier: instead of making educated (and sometimes not so educated!) guesses about what learners might want, they can tell you, either directly or indirectly. And that means listening. In this context, listening is rarely as easy as it sounds. For example, some learners might not be in a position to explain their exact needs. Sometimes, they simply don't have the necessary vocabulary; at other times, they may be unaware that they have a need.

Then there's the problem that people may not be able to describe what they want, because they don't know what is possible. Thus they often tend to describe their needs and wants in subjective terms based on what they already know. The advantage of involving learners as co-designers is that representatives of the intended end-users are involved directly with the project, helping to lead and direct the development process. Thus they are unhindered by their own preconceptions of what can be achieved.

The whole team needs to engage in a process of observation and analysis. Listen not just to what the team is saying, but also to what they are not saying. A number of tried and tested - as well as innovative and creative - methods now exist to enable people who are not formally trained in design to articulate their experiences, thoughts and needs.

Equally important is the need to consider who you listen to. Will the project be used by learners as well as teachers and project leaders? Will you need to take local variations into account? Which features can genuinely be included given the budget and resources you have to work with? This is arguably the hardest part of the design process. There are many, many voices to listen to.

Keeping the fires burning: passion
Design and development can be a long process and it's not unusual for team members' enthusiasm to wane over time. For this reason, it is important to find ways to keep the flames of passion burning. A project without a passionate team is likely to be heading for very rough seas.

How you achieve this depends on the nature of your project. For example, it might be worth considering inviting outside people in to talk about their experiences, visiting other projects engaged in similar activities and celebrating achievements at every step of the way. Sometimes even tangentially-related activities can spark discussion and re-ignite that flame.

Evaluating the project: did it work?
Evaluation is best embedded throughout

the project's lifetime. During the design process and while people are participating in an ongoing project, regular periods of reflection and evaluation (to determine what went right as well as what went wrong) can help manage change and keep the project focused on its objectives.

people learn just as much, if not more, from their mistakes. The chances are that the project will encounter some process-related problems, design mistakes or development pitfalls that need to be analysed before you move on. Sometimes, the most spectacular failures can lead to

design that has been incorporated into every bridge built since then.

So, designing educational projects that are interactive and engaging need not be such a difficult task. The key to success lies in involving all users - be they learners,

A co-design approach empowers everyone to be a designer - not just the professionals

Often projects suffer from the most common form of evaluation, namely post-mortem evaluation (which is often too late to be truly effective).

Hopefully, the project was a rip-roaring success. Nevertheless, it's a truism that

valuable insights and become important precisely because of the new information gleaned. The Tacoma Narrows Bridge collapse is a textbook example of this: studies of the disaster yielded precious information about the effects of wind and aerodynamic properties on bridge

project leaders, teachers or youth workers - as co-designers throughout the design and development process. However, perhaps one of the most important points worth remembering about a co-design approach is that it empowers everyone to be a designer - not just the professionals.

Bold Creative

Designing educational technologies for social justice

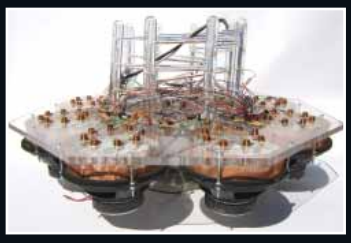
A new handbook from Futurelab explores the role that digital technologies can play in reducing inequality in education, and offers guidance on the process of designing educational resources or projects to promote social justice.

Go to **www.futurelab.org.uk/handbooks** to view or download the document for FREE (hard copies are available on request while stocks last, details can be found online).

Getting creative

It is essential for learners to be creative, to generate new ideas and to be experimental in the application of those ideas. In this section, we celebrate those that do not always take the safe and proven route, but instead are committed to trying something truly innovative. Here are just some of the exciting creative ideas that have made us sit up and listen recently...

Jamie O'Shea



A real brain wave

Artist and general innovator Jamie O'Shea's Alvin is an electronic simulation of a brain using speakers and electromagnets, with metal powder growing circuits between cells which produce sound. The sound one cell produces is determined by what sounds the other cells are making. The interrelated input and output mirrors a neural network - and so can be thought of as an 'artificial brain'. The imitation of life goes even further than this, however, because Alvin's sound circuits are built and destroyed by one another, rather than just turned on or off.

www.substitutematerials.com/artificialmemory/artificialmemory.html

van der Drift and van den Heuve

DIY the easy way

'Don't-Do-It-Yourself Days', organised by two designers, Marcel van der Drift and Arnoud van den Heuvel, for the Flemish Cultural Institute Brakke Grond in Amsterdam in April 2008, were a series of events designed to get creative minds together to help each other to solve problems instead of trying to do everything themselves. At the first evening, participants went through a series of speed-dating sessions in order to share expertise. All sorts of problems and questions were discussed - the idea being, for example, that a huge problem for a designer might be an easy task for a project manager and vice versa. The results can be found online...

www.doehetnietzelf.org

gpsdrawing.com

GPS drawing

Innovators Jeremy Wood and Hugh Pryor are using GPS receivers to draw distinctive trails that spell out place names and other interesting shapes. One current 'map' includes Oxford, where, in collaboration with groups of students and families, they walked through the town to map out a path that spells the six letters of the town's name. With possibilities for future trails including hopping along in the shape of a rabbit and methodically marching along the letters of the alphabet, this innovative idea is fun, accessible and appealing to children and adults alike.

www.gpsdrawing.com/workshops.htm

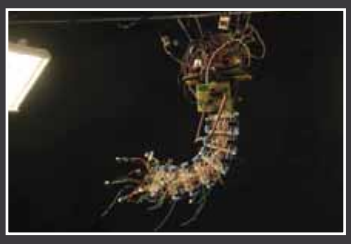
David Alison

The (e)mailing wall

Mark Hansen and Ben Rubin's Listening Post is a wall in London's Science Museum that, by displaying uncensored fragments of text - sampled in real-time - from public internet chat-rooms and bulletin boards, is a 'dynamic portrait' of online communication. The work is divided into seven separate 'scenes', each with its own 'internal logic', that sift, filter and order the text fragments in different ways. The artists say that this installation offers an extraordinary snapshot of the internet and a sense of the humanity behind the data.

www.sciencemuseum.org.uk/visitmuseum/galleries/listening_post.aspx

Gilberto Esparza



An electric idea

Parasitos Urbanos, or urban parasites, are small robotic creatures that react to their surroundings - the streets of Mexico City - through a series of sensors. Developed by artist Gilberto Esparza, they 'feed' from the street's electric cables, which they use as a mode of transportation, emitting sounds as they move around in response to their environment. They reflect, the artist says, the pervasive nature of technology in society, and our increasing dependence upon it.

www.parasitosurbanos.org

Nick Veasey

So, beauty is not only skin deep

Artist Nick Vasey has used the process of X-ray photography to create images that penetrate through to "the beauty at the core of objects". The resultant images give new insights into the innards and workings of inanimate objects and organic materials such as iPods and toy dolls - perhaps offering, he suggests, new perspectives on issues such as genetic engineering and designer babies. His projects also include larger-scale subjects including buses, forklift trucks and even a Boeing 777.

www.nickveasey.com

A FAR FROM ROBOTIC EDUCATION

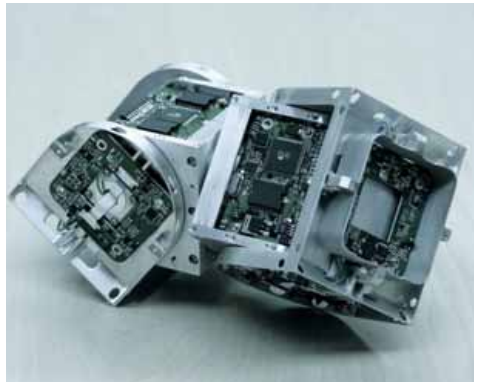
Today, it is more acceptable than ever before to use machines to make life easier and better for all. However, in the future, robots with human-like characteristics may be able to do anything you want them to, including assist with learning.

Yet that does not mean that teachers will find themselves redundant in the future. Dr Will Browne, Lecturer in Cybernetics at the University of Reading, sees a future where teachers still play a key role in students' learning, but they are assisted by robots.

"There will be a lot more non-human support for teachers over the next 10 to 20 years," he explains. "For example, students may see a real violin teacher once a week, and then go home and practise with a robot. A teacher in the classroom with 30 children may have one or two robot assistants. This could free up some of the practitioners' time to concentrate on teaching."

Steve Grand, Director of Cyberlife Research, agrees: "We're a long way from human-level intelligence so far, and I think teachers can remain safe in their jobs for a few months yet! But as artificial intelligence improves and robots become able to cope with more realistic environments, I can imagine they will become integrated into learning, just like any other tool. Children will learn through teaching their own robots. There's no better way to understand something than to try to teach someone else how to do it, and dim-witted robots would make good pupils."

Response and recognition is a vital area for robots of the future that may be required to become mentors, teachers and friends to children. A basic robotic machine that


Polymoprhic Robotics Laboratory, Information Sciences Institute, University of Southern California, USA

spouts French oral examination dialogue in the corner of the classroom and has a limited ability to respond proactively to students is likely to become a repository for used bubblegum within weeks. Yet imagine a robot that recognises individual students' faces and voices and can remember what happened in the previous lesson, and maybe even has a sense of humour. That will have much more enduring appeal - and use - in the personalised learning environments of the future.

A ROBOTIC MACHINE THAT SPOUTS DIALOGUE IN THE CORNER OF THE CLASSROOM AND HAS A LIMITED ABILITY TO RESPOND PROACTIVELY TO STUDENTS IS LIKELY TO BECOME A REPOSITORY FOR USED BUBBLEGUM WITHIN WEEKS

Scientists have been studying how to give robots this humanoid trait of recognition for many years. One example was Kismet, the robotic platform developed at Massachusetts Institute of Technology (MIT) in 2001. Kismet was created with the idea that for robots to fit into and work better within human society, they should take on more human characteristics, a crucial one of which is the ability to recognise people. This would enable humanoid robots to build relationships with people, to contextualise them, and to learn.

Increasingly key to robots' usability in the future, is the current development of modular robots. Wei-Min Shen, Director of the Polymorphic Robotics Lab at the University of Southern California, specialises in self-reconfigurable robots, and in particular, a creation called Superbot. Superbot is a robot made of modular units that are individually intelligent, and that can work together collectively to create an even smarter robot - one that the individual modules 'sense' is suitable for traversing and working in the environment it is in.

There are countless uses for a robot that is this flexible. Shen says Superbot could be used in disaster areas, where a robot can sense a body trapped under rubble and can reconfigure itself to a snake-like shape in order to slide through cracks to get to the person and deliver help. It could also be used to go into space; Shen says Superbot is destined for Mars. NASA is interested in Superbot as a multi-tasking robot to replace the countless robots it sends into the ether to carry out single tasks.

Superbot could also be applied to the classroom, showing students how different modules collaborate. Shen comments: "Each child could be given two or three modules to work with, and then they can get together to build different structures using different modules, but those structures would be alive and intelligent. Superbot would be a quick way to teach kids how to make a robot."

A simpler version of Superbot is LEGO Mindstorms, but Mindstorms cannot self-reconfigure; it requires programming. However, the act of programming is a useful skill for students to develop. This approach opens up a raft of other possibilities - those where control is awarded to the children rather than the machine.

Mindstorms is used by learners of all ages - from 8 year-old children to learned professors. It is essentially engines and sensors fitted into LEGO pieces, so children can put objects together that can then be programmed from a computer to operate in whatever way is required.

At Luckwell Primary School in Bristol, children and their teachers have worked with Stakeholder Design and Futurelab to create an intelligent fountain. The fountain is programmable and interactive, and uses LEGO Mindstorms' sound, touch and proximity sensors so that children at the school can use it for a variety of purposes. For example, they use it for recreation, in science lessons, and for drama - where a special part would be written for it as an individual member of the cast.

Tash Lee Jones, a Learning Researcher at Futurelab, comments: "The idea is giving children tools to play and experiment with, and having the tool respond. The experiment aims to see if the fountain can change the old order of things, where the teacher stands in front and tells the children what they need to learn. Here, the children are deciding what to programme the fountain to do."

Rather than putting sensors in building blocks, Alison Druin, Director of the Human Computer Interaction Lab and Professor at the College of Information Studies at the University of Maryland, is putting them in icons - toys or parts of toys that act in a way that a child would expect them to, because of how they look, eg a toy's hand that waves. Druin is looking at how robotic technologies can be used to enable collaboration, storytelling and learning in children. One project she and her team have worked on for the past two years is Story Rooms.

In Story Rooms, a child can take a stuffed toy hand or foot, put a toy mouth next to it, tap both objects with a 'magic' wand, and make the objects react to each other. The order in which they are tapped changes the programme, as does the combination of objects tapped. "The sensors are large, obvious and make it easy for young children to grasp the concept of programming," Druin says.

A lot of the robotic technology that Druin points to as having a role in the future of education revolves around the idea of developing social skills in children. "We as human beings are really social animals, so if we can develop robots that help develop that 'socialness', it's all good," she states.

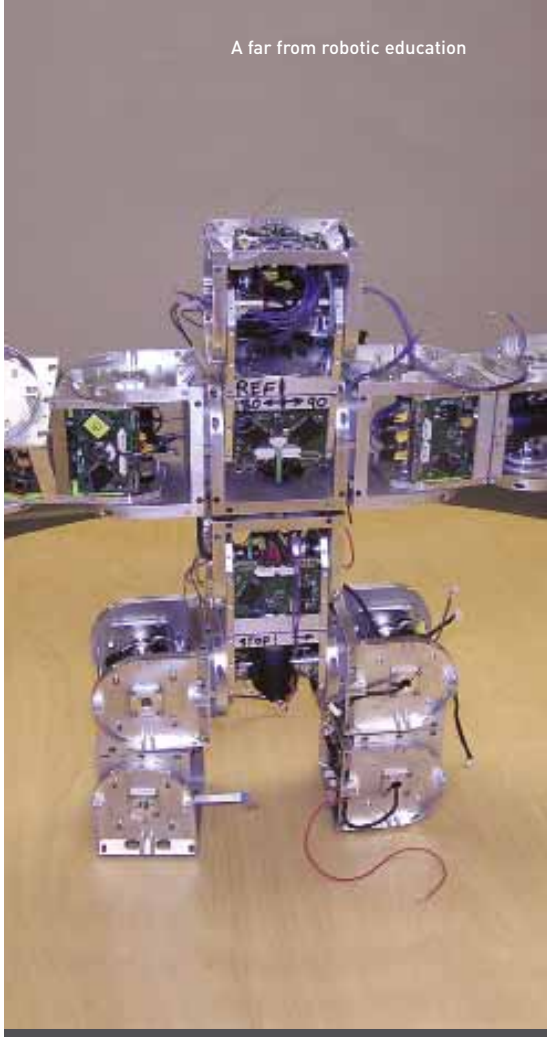
There is evidence that learners will be able to integrate socially with robots. At the University of California, San Diego, a Sony Qrio robot was introduced into a group of 2 year-olds as part of an experiment to see if the toddlers would accept the robot as one of them. Qrio giggled when touched on the head, moved about the room, and lay down on the floor when his batteries ran out. By the time the experiment was nearing its end, scientists had seen the children patting, touching and hugging the robot, treating it like another child, and when its batteries ran out, covering it in a blanket and saying "night night".

Dylan Evans, Senior Research Scientist and Evolutionary Psychologist at University College Cork, Ireland, comments: "Experiments like that are still in the early days, but I think they'll become more common. Robots have been developed that help children communicate where they feel pain; the Huggable is one, but there are several others in development. The Sony Aibo robot dog was taken to care homes in America in another experiment, along with real dogs. In the end, the old people became just as attached to the robot dogs as they did to the real ones. Maybe, with the ability to form attachments like these with real people, these kinds of robots could help with therapy and, of course, education."

However Druin adds a note of caution: "The thing with many of these robot toys and tools that give you the control you actually need to make them useful, is that they are very expensive individually, so it's cost-prohibitive to give a school a ton of them. On the other hand, kids can learn powerful things from these robots and we will start to see much cheaper robotic devices being developed in the near distant future."

Evans certainly believes that children could be taking their own personal friend and robot to school with them in less than 10 years' time. This teddy-bot would be a furry comforter, it could record lessons to help with homework, teachers could download instructions for revision to the robot, and it could be fitted with a webcam to enable communication with parents.

So it seems we are not too far away from a world where robots play an active part in our children's learning. Furthermore, it seems that these robotic friends and mentors could play a significant part in their ability to socialise or, as Druin puts it: "Hopefully all this technology will make us more human, by asking what it really means to be human."



Where does the word 'robot' come from?

Initially introduced to the masses in 1920 by Czech playwright Karel Capek in his play R.U.R. which stands for Rossum's Universal Robots, the word was thought of by his brother, Josef.

R.U.R. is about a robot factory where human clone-like robots are created. The issue of whether they are being taken advantage of, despite their willingness to serve, is explored.

Yet the word 'robot' comes from the word 'robota', which in Czech, Slovak and Polish means literally 'serf labour'. Robota comes from the first literary Slavic language, Old Church Slavonic, where the word 'rabota' meant 'servitude', or 'work' in modern Bulgarian and Russian.

Events

Interaction Design for Children

11-13 June 2008

Chicago, USA

Each year, IDC brings together the leading researchers, designers, and developers of children's technology to discuss the challenges, opportunities and emerging trends in interaction design for children. This year's conference theme is 'Think Outside the Toybox', and in addition to sessions on videogames and other toys, IDC08 will have sessions on educational technologies, online communities, assistive technologies, and a special pre-conference workshop on designing for children with disabilities.

idc08.org

New Learning Cultures

11-14 June 2008

Lisbon, Portugal

This conference will address the significance and impact of cultural issues in distance and e-learning development in Europe and beyond. Includes sessions on Intercultural Learning in Global Perspective and Learning Cultures and Learning Innovation in Europe.

www.eden-online.org/eden.php

EISTA 2008

29 June - 2 July 2008

Florida, USA

Relationships between education and ICT are increasingly accelerating, sometimes in unexpected ways, with original ideas and innovative tools, methodologies and synergies. Accordingly the main purpose of EISTA 2008 is to bring together researchers and practitioners from both the education and ICT communities.

www.socioinfocyber.org/imsci2008

ITTE 2008

14-16 July 2008

Cumbria, UK

Evolving built and virtual learning environments are increasingly central to education. Schools increasingly utilise virtual learning environments and Web 2.0 technologies to enhance learning. At the same time the Building Schools for the Future project is embedding ICT in new school designs. This conference will focus on evolving learning environments and how we prepare tomorrow's teachers today.

www.itte.org.uk/index.php?id=81

Building Learning Communities 2008

14-18 July 2008

Boston, USA

The 2008 Building Learning Communities Conference is designed to have an immediate and long-range impact on improving teaching and learning. The conference programme features hands-on pre-conference workshops, keynotes and over 90 workshops.

novemberlearning.com

SIGGRAPH 2008

11-15 August 2008

Los Angeles, USA

SIGGRAPH 2008 is evolving along with the computer graphics and interactive techniques community. This year, they are promising to dissolve the borders between traditional SIGGRAPH programs to create a more fluid, interdisciplinary conference. In addition to celebrating the best in creativity and innovation from the past year, this event will cover sessions on Future History and Professional Development among others.

www.siggraph.org/s2008

Mobile HCI 08

2-5 September 2008

Amsterdam, The Netherlands

The 10th International Conference on Human-Computer Interaction provides a forum for academics and practitioners to discuss the challenges and potential solutions for effective interaction with mobile systems and services. It covers the design, evaluation and application of techniques and approaches for all mobile and wearable computing devices and services.

mobilehci2008.telin.nl

IAEA 2008

7-12 September 2008

Cambridge, UK

The theme of the IAEA 2008 conference is 'Re-interpreting Assessment: Society, Measurement and Meaning', and keynote speakers include Professor Robert J Mislevy from the University of Maryland and Professor Dylan Wiliam from the Institute of Education at the University of London.

www.iaea2008.cambridgeassessment.org.uk/ca

ALT-C 2008: Rethinking the Digital Divide

9-11 September 2008

Leeds, UK

The digital divide tends to be seen as a problem of access whose 'solution' will bring a myriad of benefits. The reality may be quite different: technology, once supplied, may fall into disuse; connectivity may be in short supply, or too costly; lack of uptake may be a conscious and rational decision. The digital divide is multidimensional, rather than being mainly or only about access, and this conference offers the opportunity to explore this issue.

www.alt.ac.uk/altc2008

The Scottish Learning Festival

24-25 September 2008

Glasgow, UK

Fiona Hyslop, Cabinet Secretary for Education and Lifelong Learning, describes the Scottish Learning Festival as "a real opportunity to get to grips with the latest developments in education, to swap ideas and to learn from experts in the field".

www.ltscotland.org.uk/slf

Futurelab conference on learner voice

Autumn 2008

Midlands, UK

Despite the vast number of changes in the education system in recent years, learners remain largely unheard in the change process. If education is to become more personalised, then the views of learners must be heard. This conference offers attendees the opportunity to challenge existing notions of what 'learner voice' should mean in practice. It will explore the role of learner voice in personalisation and the technologies that offer the potential to embed learner voice in practice.

www.futurelab.org.uk/events

mLearn 2008

7-10 October 2008

Wolverhampton, UK

The aims of this conference are to bring together the world's leading mobile learning researchers, developers and activists in an environment that will stimulate dramatically increased deployment of mobile learning and catalyse dramatically enhanced innovation.

www.mlearn2008.org

Handheld Learning Conference

13-15 October 2008

London, UK

This event promotes the use of mobile and ubiquitous technologies to enable transformational improvements in teaching and learning.

www.handheldlearning2008.com

The Future of Mobile

14 November 2008

London, UK

This event brings together pioneers of the mobile web to discuss future directions in content, usage, devices, development, commerce, marketing, advertising and more.

www.future-of-mobile.com

Education and Educational Technology (EDU '08)

21-23 November 2008

Venice, Italy

The World Conference of WSEAS on Education and Educational Technology (EDU '08) is organised by the World Scientific and Engineering Academy and Society (WSEAS). While its main focus is educational technologies, it also covers engineering technology.

www.wseas.org/conferences/2008/venice/edu

Online Educa Berlin

3-5 December 2008

Berlin, Germany

The largest global e-learning conference for the corporate, education and public service sectors.

www.online-educa.com/themes

BETT

14-17 January 2009

London, UK

It's the world's biggest educational technology show and attracted nearly 29,000 visitors in 2008 - all the key UK ICT organisations, agencies and companies are there. Increasingly international, you need to pre-register and pre-plan to make the most of this bustling event.

www.bettshow.com

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