

Futurelab conference transcript

Spaces, Places and Future Learning: Using innovative technology and practice to re-imagine learning spaces

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Mobile technologies and learning spaces - where next?

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Ian:

Thank you very much. Hi, ladies and gents. My name's Ian, as has been said already. So, we'll play along very, very quickly. I realise you'll want to get your lunch fairly quickly. Just something that David said, in his welcome address this morning, was how he hoped we weren't going to have to go and refit and readdress schools in 20 years time. I think he said it a little bit later on, we're in an era of continuous change. I think, we will be doing that. So, I don't think we necessarily will be changing the spaces, but certainly the technology by then. I just can't imagine what the technology is going to be like at that point. Let's have a look.

We're in the mobile age at the moment. Mobile telephony is becoming ubiquitous. In 2005, under 16 ownership in the UK was sitting around about 5,500,000. Same year, there were 1,500,000,000 mobile phones worldwide, out of a total world population of 6,000,000,000. And in the third quarter of 2006, there were 250,000,000 units shipped in one quarter, worldwide. So, they're heading for their 1 billion units per year, shipping of new units. Obviously part of that is multiple ownership. I've got two phones and there's another couple at home, probably, and obviously the desire for the latest product as well.

There are some interesting stats in the Mobile Life report from Carphone Warehouse. Some interesting stats, some interesting dialogue in there, and lots of sections on family and work and all that sort of stuff. Interesting there's no actual section in that report on learning with mobile phones.

So, learning in the mobile age. We've been focused really, in the last few years, I suppose, with all the new mobile technology that's coming online, on the technology itself, rather than actually on the learning. But, we're now starting to focus on the learner. We're looking at how people learn across contexts, how they learn at work, how they learn at home, and actually how they learn across those transitions. David's travel on the underground and how people learn in those transitions. How you will learn on an aeroplane. How you will learn walking down the street.

We're learning in a world of increasing mobility, and that's a fact. Everybody is moving around an awful lot more, these days. And, we're learning in a world of increasing connectivity. There's just no getting away from those e-mails anymore and, although we know we're supposed to have turned our mobile phones off today, how many of you have actually put it on silent or vibrate, just in case that important call comes through? And you know you hate getting them, but you're going to have it on, just in case.

Let's have a look at the technology, mobile technology, and I'm specifically really starting to talk about mobile phones at this point. It's user-centred. It's very personal. It's ours, even if our company or institute has bought us the mobile phone, it's ours. It's networked. It's definitely portable. It's becoming ubiquitous, as we've said, and it's durable. Even with the new technologies coming out, people can move their contacts, their content of those devices onto their new device.

Just as an aside, anybody want to spot the uncool technology on here? The uncool technology is the one on the far left. Sorry, your far right. I'm getting it the wrong way around. Ask any teenager. Anything with a sticky-up aerial is definitely uncool. Anybody

who says the middle one is uncool, you're dead because that one's mine, although it's an uncool picture on it.

We are converging with devices. Whereas, previously, we'd looked at convergence as being down to one single device, where we'd carry one device with us. That's what we'd use to do our presentations. We'd carry our TV with us. We'd carry our camera with us. We're coming down to separate devices that are converging. There are now mobile phones with five mega-pixel cameras on them. That's one mega-pixel more than the best camera I actually own, and that's a mobile phone. So, we're coming down to convergence, but not into one device. We're coming down to several devices, but we're coming down to convergence in connectivity and controllability, so that we can share content between our devices. We can control our media centre from our handheld, or from our mobile phone.

Look at personalised learning. It's learner-centred and it's individualised. It's everything around what we do as individuals. It can be collaborative, and often is, with family and friends and peers, wherever we are, whether we're in a formal or an informal arrangement, whether we're at the zoo, whether we're in a classroom. It's situated wherever we are. We're learning, we're learning all the time. It's ubiquitous and it's lifelong. So, you can probably see where we're going with this. I'm not going to claim that this is the definition, but let's have a look. The mobile technology and the learning, it's user-centred and learner-centred. It's personal and individualised. I'm not going to read down the list. You can see where we're going with this. There are hundreds and thousands of definitions of mobile learning out there but, what we're looking at today, from my perspective anyway, is this sort of area.

There are some issues for schools. Obviously, we're going to be looking at more than just schools, but one of the things that I was asked to concentrate a little bit on, especially with the BSF programme, and that comes out two or three times through the presentation. It has, obviously, in presentations this morning already, and will feature tomorrow as well.

There are issues for schools with using mobile personal technology, mobile phones. The obvious ones are time wasting and disruption. Just people playing around with the technology, texting friends, doing whatever they want to do with it. There's the possibility of cheating, diving onto the internet for answers during an exam or something like that. There's more serious issues of happy slapping, that dire craze, and bullying via text messages. And there's the availability of the technology. We only ever had to worry that we had a piece of chalk and a wall to write on. I'm not sure whether that was a teacher or a graffiti artist that was actually saying that, but I was thinking, if the students don't have the technology available, what do you do about that? If you've actually committed something, to be available via that personal technology.

A quote from my boss back at Nottingham, Mike Sharples, the skills that children are learning at home, social networking, gaming, file-sharing, multi-tasking, just don't fit easily into conventional classroom teaching. So, I'd like to propose that mobile phones are an opportunity and not a threat, if they're managed correctly. If it's not managed, then, yes, you may have a problem. At my daughter's school, mobile phones are banned, which is a shame because it is quite a forward-looking school, but they're actually banned. One of the issues they quote is that of bullying, but also that of theft, that they can't be held responsible for mobile phones being stolen from people, either in or around the school.

Let's have a look at the learning spaces. This is my daughter, Katie. She's at Channery Point on the Moray Firth. We went dolphin watching. She's actually checking to see whether Rainbow, her adopted dolphin, has been spotted in the area. So, she's just checking the WDCS site to see whether Rainbow has been spotted in the area and whether there are any other animals or wildlife around that she can go and find out about. That was taken this year.

Let's set Katie aside for the moment and have a look at some of the more defined learning

spaces that we already know about, school, colleges and university. So, we've got the classrooms and the labs, but already we're looking at learning spaces that go outside of that, the playground, the sports field, the social areas, the cafes and dining rooms. Of course, we've got this huge opportunity with BSF to actually incorporate technology into the building that will aid learning in those spaces, be they formal or informal spaces. We've got learning in the home. There's learning in the bedroom and the study, learning in the lounge, we're learning in the kitchen. We can learn in the garden and in the street. Whatever hobbies we're doing, talking to the neighbours or whatever, we're learning all the time. In the wider community, parks, places of religious worship, in cafes and bars. So, out into the community, either in part or in whole.

Whole cities have been looked at to actually be converted into a learning community. There's the city of Bath's City Ware project. So, they're deploying a wireless information service across the city that will allow people to interact via that service. So, I'm proposing again that all of these spaces can be brought into this area of technology, using personal technology to interact with those spaces if we can put the systems into those spaces.

What we're not going to see is this. We're not going to be wandering around with heads-up displays strapped to our heads. The technology's got to get a lot cooler and a lot smarter than that before that's seen. The research into that is great. I've been part of some of that research, but we are not going to see hordes of people wandering around with heads-up displays on, even though we had Charles Clarke who worked at our place in Birmingham with one of those strapped on his head. It made a good picture, anyway.

The first phase of mobile learning focused on handheld technology for formal education and training. So, classroom response systems, data logging and such like. I'm going to whip through these fairly quickly because I'm aware of the time. The second phase of mobile learning got a little bit more interesting. We were looking outside the classroom now. So, we're looking at field trips, museum visits and sort of byte-sized learning. So, BBC Byte Size was a great success, actually delivered to mobile phones. We had two major European projects going on, Mobi-Learn and M-Learning.

Just now, a quick look at one of these that I think falls into that second phase, which is a product called WildKey. It was a wildlife identification system that ran on PDAs and it allowed students to go on a field trip and, it was an expert system effectively. They were able to put information into the device about what they'd got in front of them. On, say a seashore visit, they were able to have this preloaded with the data. You'd have a set of questions in front of you. Is this a seaweed you're looking at? Is it a shell? Is it a starfish? So, you clicked on starfish. It would then ask you some more questions and it would eventually lead you through to actually being able to identify the creature or the plant or whatever that you'd actually got in front of you.

I was asked a question, couldn't you do this with a 20-page booklet? I'd suggest that 20 pages is probably pushing it. Probably more like 200 pages, and the thought of flicking backwards and forwards through that many questions, of go to page whatever and go back to page 66 or whatever to actually find out what this creature is, the PDA lends itself quite easily to this. It's of great relevance to the National Curriculum, and in school-based trials what they found was that the children had an 800% increase in recognition of these creatures and animals, even once the PDA was taken away. But, they actually had spotted a problem, themselves. They're now having to spend quite a lot of time developing virtual field trips for the desktop because of the low deployment of PDAs into schools. If this was developed for mobile phone usage and mobile phones were allowed to be used in schools, then maybe this would be a flyer.

Of course, there's the Futurelab literature review in mobile technologies and learning and what actually works. I'm going to whip through to the bottom on that. So, classroom response systems. You can see everything up there. SMS alerts to students about admin issues, room changes, deadlines and all that sort of stuff. Revision questions to mobile

phones. BBC Byte Size, I've already said about. Simulation games, like the virus game, they're playing that in the classroom amongst children. And, basic mobile multimedia games. Again, all of that's in the Futurelab literature review.

The third phase, what we're moving into at the moment is mixed reality learning, contextual learning and ambient learning, where the focus now is actually on the mobility of the learner, the actual design of the learning spaces that they're actually in, where they find themselves at the time, informal and lifelong learning. I originally put this in and then took it back out, because I know Dan Medicoff was speaking about that, but then I found out he's actually in the parallel session to me, so I stuck it back in.

Mixed reality learning and My Art Space project are funded by Culture Online. The aim was to make museum visits more engaging and educational. You can remember, as a child, those museum visits from school. You know your exact thoughts, yes, we're getting out of school! What did we learn when we got there? I'm not quite sure. I can always remember those tick boxes that we had to go around to say that we'd been and we'd seen something. But, I actually can't remember what I actually got out of that, apart from actually getting out of school. So, this project combines the personal space. The children were given mobile phones as they entered the D-Day exhibit. There were physical spaces involved, the actual museum and, then, when they got back to the classroom. Then, there were the virtual spaces, the online repositories for their information and a photo gallery as well. So, they're actually just curators of their own material, collecting this stuff as they went around the D-Day Museum. They were able to add their own interpretations. They used their mobile phones to collect all that information. They used it to take photos, make recordings and actually share notes. Then, they created their own ideas and own thoughts and actually published them onto a site. As I say, Dan is actually speaking about that in a parallel session at the moment.

Initial results of that were that the mobile phones worked. The students liked the cool technology. It was a familiar technology but it was cool enough for them to actually say, yes, this is good. They actually liked it. Some students have been there to the exhibit before and they actually got more out of it on this visit than they had previously. The teachers were pleased, as well, that they'd actually engaged with this task. The task was to actually create an argument for the success or otherwise of the D-Day landing. So, they were going around and not just looking at what was there. They were actually engaging with the exhibits. There were some minor usability problems and they decided that some more work was needed on the collaboration issues that were there as well.

Contextual learning. What can we do in context? We can deliver appropriate learning context, based on where we are and what we're doing at the time. We can enable activities in context. So, we can do data logging based on what we're actually doing at the time. We can look at things like game learning, Savannah. Savannah's a project where children are engaged as lions on a savannah, in a real place. The PDAs, the mobile technology gives them information and overlays that information to their real space. So, there can actually be lions on a savannah and go after their prey. They'd have their own territory to actually play within.

We can offer services. We can offer communications and awareness. So, Harry Potter's marauder's map of knowing where your compatriots are, where you are in relation to other spaces and other objects. Of course, we can customise the content, the interface and the interaction based on the device we that we are using, the level of detail that we need, what we're doing at the time. Are we stationary, so we can sit and read something? Or are we moving, where we need to be fed information via an audio interface? That sort of level.

This product, CGAE - Content Aware Gallery Explorer was developed as part of the Mobi-Learn project. Again, I'll whip through to the actual project itself. What it was, was allowing visitors again to engage with exhibits. What was happening, and you can see in the gallery picture on your right, is that what people tended to do at the gallery was that they tended

to walk straight down the middle of the room, looking right, looking left or look one side of the room and look at one set of pictures, and then out of the room at the other end. This system was based on ultrasonic, so it just fed information, based on the position of the gallery visitor. What it allowed it to do was highlight links between paintings. What the curators immediately noticed is that people were moving around the room, circulating around the room and engaging with the content of the gallery again, rather than just wandering through and not paying much attention to what was there.

CAERUS, another system that was developed at the University of Birmingham, at CETADL, that basically allowed you to author location-based learning systems. You had a desktop system, which you were able to import and map to, and then, you can see the grid on there, you could overlay on that map your GPS coordinates. So, you'd wander around your physical spaces and tie in the map to your GPS coordinates. Once you'd done that, you could associate areas on the map with multimedia content. So, you could literally just drag around the map, mark an area out, and attach, say a text file, an audio file, video, or several sets of these. Then, what would happen, is that on the handheld client, as the visitor went round the outside spaces of these exhibits, they would get fed information as they entered an area, automatically. So, as they entered a rose garden, that's when they'd get the information about the rose garden.

Results of that were that most people liked getting the information in context. What came out of it, and reinforced previous research, was that it was important to have a heads-up response system, basically audio. People didn't want to be in a physical space, looking at, say the rose garden or something like that, and then have to keep looking down at a device. What they wanted was to be fed information via audio about what they were looking at, and that came out very, very strongly. Just tell the stories behind the exhibits and the spaces that people were looking at.

Ambient learning. I'll basically whip through to the example of that, which is ambient wood, Equator Project. A digitally augmented woodland, where there were devices implanted into the woodland that would allow the visitors to the woodland, obviously mainly children in this case, to engage and do some science learning, in a physical space, in an actual woodland, but using technology to get deeper into that space, and deeper into what was there. So, they'd see small creatures. They could see the effects of climate change. They could do experiments with technology that was embedded into the woodland. Part of it was mobile and part of it was fixed.

Steve mentioned this previously, Djanogly City Academy. It was the first school to be built to actually support mobile learning. It's quoted as the most innovative school in Europe and, yes, all the students had wireless tablet computers. Again, no whiteboards. Everything linked up to wireless data projectors, but they do have small group and informal learning spaces, where the students can collaborate. You can see some of the uses there. Plasma screens to display students' work and to link up with the students so that they can collaborate around what they want to do. So, it's not just a formalised classroom.

Moving onto the future. What's that going to bring? What we're looking at, is augmenting the environment with embedded devices that will interact with our own personal technologies. What I'm talking about here around personal technologies, is that ubiquitous thing, the mobile phone. For instance, we could have children that are asked to investigate their immediate environment. They could have their own mobile phone, augmented by technology supplied by the school, sensors and things like that.

Let's start with a class discussion about what they're going to find when they go out there. [Unclear] could then go out into the wider environment, into the building, into the grounds of the building, maybe into the wider community and actually interrogate systems around, about that. I had a friend over from Canada who is a teacher and she said, wouldn't it be great if we could have walls interacting with kids? A child could walk up to a wall and the wall would interact with the child, supplying information about the building, about the

construction, remember that child for a future date, so the information comes back. Wouldn't it be great if we could do that and engage the child that way, with the actual building that they're in.

Another idea, and this is from Science Scope, group of students that are given the task of investigating air quality and pollution, in and around the school. They have a system that will display those results on Google Earth in 3D, which is the picture over there. Again, let's go down. So, what we're looking at is lifelong learning support, environments that actually teach about themselves. Back into BSF, again. We have a massive opportunity with BSF to put this technology into the spaces that we're designing now. Let's get our heads together. Let's get the spaces right, but let's get the technology built in that will allow this interaction to actually happen.

Location-based social networks. People being able to share their experiences. Virtual graffiti, leaving this information in this talking wall, if you like, so that when somebody wanders up to a building in the street, they can find out the history about that building, not from some dry source, but from somebody that's lived there in the past, somebody that's experienced the street back in 1930, that sort of interaction. Of course, wide area educational gaming is also coming along as well. So, the world's already mobile. All we've got to do now is to design it for the mobile learner. I'll put some quotes up and credits. Thanks very much.

Chair:

Thanks very much, Ian. We've got time for one last question.

Q:

Just really a support for the mobile way of working, both in receiving content and in context-based creation of content, too. As an example, I had a group of students in Bratislava last week. I attended a UN conference there, and with converged devices and mobile phones, they were on the fly, almost, sending out video, audio, pictures, straight up to a blog we'd created. That was to be disseminated by their peers, back in schools in Bradford, almost as it was happening. Absolutely superb experience and really good content being created.

Ian:

Yes. That's a good example. If we can build that into the spaces as well, so that it becomes a permanent record of actually where it's happening, as well as being posted in to remote spaces, but actually keeping it where it's happening.