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PRESENTER – KAREN COLEMAN

Now, many of us would be lost without our computers, mobile phones, palm-tops, digital televisions and recorders and other modern gizmos that are supposed to make our lives easier. Sometimes though, the more of these gadgets you have the most stressed you can become and indeed the harder you work. E-mail for example was supposed to make communications much easier and reduce workloads. Instead you could say e-mails just add to the numerous things we have to do in our working lives. Well, whether a help or a hindrance, technology is an integral part of our lives and it is set to become even more so with technological development promising all sorts of other magical offerings. Well, in the heart of Dublin technological and communications experts are beavering away, working on innovative ideas that may improve all our lives.

Media Lab Europe, which is the European wing of the Boston Massachusetts Institute of Technology is based in the heart of Dublin down at the Liberties and next week Media Lab Europe and the Department of Education and Science will hold a conference on how information communications technology can improve our educational systems. They will be discussing ways to use technological developments to advance all of our learning experiences. And a key person taking part in that conference is with me now. Carol Strohecker directs the Everyday Learning Group at Media Lab Europe down at the Liberties. She is with me now. Carol Strohecker, you are very welcome to the Wide Angle.

CAROL STROHECKER, DIRECTOR, EVERYDAY LEARNING GROUP, MEDIA LAB EUROPE

Very happy to be here, thank you.

KAREN COLEMAN

Good, a stone's throw away from you there at the Digital Media Centre, or near the Digital Media Centre. Carol, I suppose we get off, maybe start to talk about what this conference, what you are hoping to achieve or what it is all about, tell us about Media Lab Europe because we see its name being mentioned every now and again, it is often being associated with very whacky kind of gizmos, many of us wondering well, what's that going to do for all of us? But can you tell us a little bit about Media Lab Europe and what you do down there?

CAROL STROHECKER

Happy to, Karen. We are an international research and innovation laboratory. As you said, we are the European research partner of the MIT Media Laboratory. That lab began in the mid-1980s. I was one of the incoming graduate students at that time, did both my masters and Ph.D. work there, finishing in 1991. At MLE we are trying to use the same kinds of methods to conduct research that have been proven to be innovative and really ground-breaking within the MIT Media Lab. We are highly interdisciplinary, highly collaborative across people from a number of different backgrounds and skills, and what we generate are research demonstrations. They are not product prototypes, we are not saying this is a gadget you'll have in your living room in 2 years or 5 years, more they are pointing directions to new ways that technologies could be approached, new kinds of combinations of functionalities and so on. And they are asking a "What if?" kind of question, what kinds of applications might be possible if certain technologies are put together? It is very much a research perspective.

KAREN COLEMAN

When you talk about interdisciplinary procedures or policies down there, you mean for example that artists might be linked up with technological engineers or musicians? Just give us an idea of what sort of interdisciplinary events or interactions go on at the Hub?

CAROL STROHECKER

Very much so, and as we all know, even from the computers that we all use day-to-day, we can have text, pictures, sounds, many different kinds of modalities on these computational systems, so it only makes sense that people whose expertise could be in one or another of those domains would need to come together. So it's a very active mix and as I said, quite international as well, so we value the different perspectives that people would bring to the kinds of problems that we see emerging in the world, how can we begin to address them is a question we are always asking.

KAREN COLEMAN

What sort of innovative systems have you created recently?

CAROL STROHECKER

We are working a lot with sensing technologies and one of the ideas that we have been asking is how – as computer technologies became – well, let's look at 20 years, I'll set it up that way, 20 years ago something was happening in the world that, in a way, made predictable the situation we have now with laptops, hand-helds and all that. That was that silicon chips were becoming increasingly miniature and increasingly affordable. It meant that these chips, these computational capabilities, would be able to be built into the devices that surround us every day, and – as you say – in some ways that complicates our lives. In other ways of course it makes it quite easier. It's all a question of use and that's very much a question in the forefront for us at Media Lab Europe, we are interested in expanding human capabilities,

expanding human potential. How can we use technologies with people as the main concern. So we look now at a similar phenomenon, sensing technologies, sensors that can detect invisible chemical components in the atmosphere, different things in the physical world around us, these sensing technologies are now becoming increasingly miniature and increasingly affordable. And the question becomes how can we expand the human's ability to detect things in the environment that their natural senses wouldn't enable them to detect.

KAREN COLEMAN

That's interesting, what sort of things are you talking about detecting?

CAROL STROHECKER

Well, any number of things. We have one project that's working with weather sensing devices, so from using a hand-held sensor-equipped PDA, a little hand-held computer - - -

KAREN COLEMAN

A little palm-top or whatever.

CAROL STROHECKER

Yes, in addition to the global positioning system which can tell you exactly where you are, longitude, latitude and so on, there is a compass built in, there is a solar chip which is recognising how much sunlight there is to be able to calculate for you how much daylight is left in a day. There is a moisture sensor so if it's raining that actually feeds into some of the capabilities of the system. In this example it actually triggers different stories that come up and tell you about different people's experiences along the same nature trail that you are hiking along.

KAREN COLEMAN

You are joking!

CAROL STROHECKER

No, not at all.

KAREN COLEMAN

So you are walking through the forest, you have this thing in your hand and you press a button which maybe it might try to elicit what sort of moisture is in the air, is that right?

CAROL STROHECKER

You don't have to press the button, it just happens automatically and of course - - -

KAREN COLEMAN

And it gives you stories about - - -

CAROL STROHECKER

It will give you lovely filmic stories and it's about a silkie that comes to shore and it actually has to go back to the water - - -

KAREN COLEMAN

Walking in the forest, the last thing you want to do is start looking at a palm-top, don't you want to enjoy the forest?

CAROL STROHECKER

You do, absolutely, and we've completely acknowledged that but you might want a compass, right, so there are some things you want and some things you don't and for us this becomes a design space, this becomes a design problem and as I said, we've always got the human experience at the forefront, so that's exactly the kind of separation we have in mind: what is the information you need in the immediate time and place, and what is more appropriate at some later time? So in this same project we have actually made that sort of split so that when you are walking along the trail you get the information that helps you make decisions about where you would want to go and maybe give you a little bit of historical or narrative information about the space which is interesting in the moment but not too distracting. And that's convenient anyway because on that narrow-bandwidth device you couldn't have the full movies anyway, not at this point – eventually perhaps.

Then the idea is that later when you are home with your hot chocolate by the fire you can upload this to a larger system, you can see your hike recapitulated, see a little trace of the trail you have walked along and now you get the stories in their full form, their full filmic version, so from a learning perspective I think this is interesting because it gives you an opportunity to revisit some of the decisions you made and that reflective process is very key in any kind of learning. So this is one example of a way that we are building into an experience, building into an interactive process, one of the key elements in learning overall, which would be reflection on one's actions and then reconsideration for the future, perhaps.

KAREN COLEMAN

So if you reflect on an experience it actually improves your learning experience, does it?

CAROL STROHECKER

Well, that would be a general principle. I mean, you see yourself, you reflect back on it and say, "Was that the right thing to do? Would I do it the same way again? Is there a way I can

debug that? We like to use that term even for human problem solving, not just for debugging computer programmes, because it's a very important kind of strategy for learning as you go along, you know, figuring things out as they arise.

KAREN COLEMAN

If you just take that sort of gizmo that – you know, we might all have access to it at some stage, you are taking a walk in the forest and then you are fiddling around with this thing or whatever, and then you go back home and you revisit the lovely walk you had in the forest, isn't that an awful lot of mind-jamming stuff? Wouldn't it be a lot better that people are left alone, that they just walk, you know, have a nice walk in the forest with whoever, maybe a loved one or family member or maybe on their own, and then they come back? And instead of logging onto a computer and yet having more distractions, couldn't they just sit on the sofa and just reflect in a meditative way without having any of these gizmos around them?

CAROL STROHECKER

Well, they certainly could, and to each his own, right? But one thing that we find is that sometimes these objects act as mediating devices between people, between a parent and child, for example, and we did have some of those groups trying this on the trail. Sometimes in those relationships it's a bit awkward for people to communicate and having something that they can both look at together and play around with a bit actually helps to facilitate the communication. So I think it's case-by-case, situation-by-situation, you know, person-by-person. What I think we need is to expand the range of possibilities for ways that people can relate to each other, that they can communicate with each other, and it's not an either/or kind of situation. As we understand from looking at the history of technology, for example, when it became possible to move from radio to television, everyone was worried we would lose radio. Of course we didn't, and similarly when moving pictures came along everyone thought that stage plays would go away – but of course they didn't. It just adds to the range of what's possible and in my view, that's a very important kind of development, because it means that more people can make choices about what – maybe their preferred mode overall for accessing information, for expressing themselves, or it gives them more of a range to

choose from. Of course, we all need different things at different times. So I'd look at it more that way, it's not a matter of either/or replacing one with the next, but we just expand the range and this is in the end good for people, I think.

KAREN COLEMAN

Okay, and I want to also talk about the developments that might be coming down the line and all this blue chip development as well and how that's going to make our lives easier. By the way, you are listening to the Wide Angle, Karen Coleman here and I'm speaking with Carol Strohecker, who directs the Everyday Learning group at Media Lab Europe which is based down there at the Liberties. Very interesting stuff and very innovative developments that they are working on down there at Media Lab Europe at the Liberties. Stay with us, we are going to continue our chat with Carol just after Newstalk 106 20/20 news.

BREAK FOR NEWS

KAREN COLEMAN

You are very welcome to the Wide Angle, Karen Coleman here. Now, my guest of the week this week, and she's with me in studio, is Carol Strohecker. She directs the Everyday Learning group at Media Lab Europe which is based down at the digital Media Lab by the Liberties here in Dublin and next week, that's starting on Monday and Tuesday of next week, a major conference will be held between – it's in conjunction with the Department of Education and Science who will be holding it with Media Lab Europe and indeed MLE will be holding its own conference on Wednesday. Now, they have been involved, as I said there before the news, in very innovative developments at MLE. Carol has been talking about some of those. Carol, just in terms of some of the other developments that we might all be subject to, or might be available to us, there's Blue Tooth developments.

Now, I have to say I'm not an IT expert and I'm not going to try to pretend to be one, but the little that I know of it is that we were supposed to be able to manage our homes for example

from maybe more remote distances, so for example, I could sit here and check that my fridge might need 3 bottles of milk, or something like that. Can you explain a little bit about the Blue Tooth developments and where we are with them now?

CAROL STROHECKER

Well, the Blue Tooth is simply a protocol that enables wireless communication among different kinds of devices. So as you say, if you had something that could read the information from your refrigerator remotely maybe you would get some information like that. You know, all of those technologies. That's not the area that I work in, in particular, but again, I think it points to a bigger question about an increase in ability to communicate – among devices in this case, but among people overall, as we have wireless access to the Internet from our laptops or hand-helds, we'd be able to access information that we might be looking up online, or e-mails, whatever it might be. I love it, for example, when I can go into an airport and check my e-mail. I'm very busy, I travel a lot, to me it's a - - -

KAREN COLEMAN

This is by mobile phone, is it?

CAROL STROHECKER

You could. I use the laptop but you could do it many different ways but this overall question of whether something like this is good or bad in a way situates the discussion problematically for me, I think. I think that technologies are simply capabilities and people use them in different ways and that is really what we need to talk about. It can be used for ill or for good and that's what we have to be intelligent about deciding. There's an example that I love to use and that's of Alfred Nobel who was, of course, the person who instituted the Nobel Peace Prize among many others – and you know why he did, Karen?

In the case of the Peace Prize, he was actually a scientist, he was an inventor and in his day, the miners had a lot of difficulties, a lot of problems, accidents happening all the time, very difficult to get the resources that were needed for any number of developments economically and technologically and so on. And he was trying to ameliorate a situation for workers by creating a way that they could more easily get to that resource which was the basis of their industry. So he invented dynamite and that was developed for the mining industry and it of course had all kinds of positive effects there, but when he saw that it was being used as an instrument for war, eventually, he was so horrified that he instituted the Peace Prize to try to compensate in some way.

And this really speaks to my point that it's not the technology that's good or bad, it's what we do with it. How imaginative can we be and how resourceful can we be about developing and implementing ways that we can use it truly to benefit people? This becomes the important question. And as - - -

KAREN COLEMAN

But then you have the dilemma I mentioned earlier about e-mails for example, they were supposed to make our life easier. Now, I'm a huge fan of e-mails and I adore the Internet, but in terms of e-mails, you come in some days and there is just such a stack of e-mails in front of you and it adds to your workload. How do you get around that?

CAROL STROHECKER

I get hundreds of them so I totally agree with the dilemma and I'm not the one to solve the e-mail problem that way, but I do have to say that my work has been eased by it at the same time and if I didn't have it, there are many ways in which my job would be a lot harder and my life for that matter. You know, I live here in Ireland, I've been here for about 3 years and I communicate regularly with my family through e-mail, so it's not even just work but that has enabled a kind of global situation that I think we need to develop further, we really need to be communicating with each other and this is one way that we can do it, making it

possible. We need to learn how to manage it in different ways, no question about that, but I can't imagine my life without e-mail.

KAREN COLEMAN

I know, I can't either. And just in terms of other developments then, you mentioned then how communications and – you can now communicate with your family through e-mail and just get instant responses, it makes the world ever more smaller. How is that – what is the picture of this sort of development likely to look like in 10 years' time, for example?

CAROL STROHECKER

For technology – what I would like to do is try to imagine how education would change, both in response to new technologies and helping to shape the way that people think about them. So just imagine a time traveller from 100 years ago, even 50 years ago, coming to visit us right now, they would see dramatic changes in medicine, in communications – not in education, interestingly. I think it's important for us to ask why. They would see the same kinds of classroom situations, the same kinds of drill-and-practice exercises and so on. We know from research and practice on computers in schools (when that can be handled well) that something much more interesting is possible in terms of addressing how do people think and how do people learn and how might the medium have something to do with that. In a static medium, such as pencil and paper, only certain kinds of things are possible. Mathematics, which is a lively dynamic area of professional practice, very visual, very lively in terms of the kinds of discussions and debates that people engaged - - -

KAREN COLEMAN

You've obviously had a different experience of mathematics I think than I have.

CAROL STROHECKER

Well, no, I hated math as a kid – why shouldn't we – to be sitting doing sums with a pencil and paper, it's about so much more than that. It's been reduced to that in part I think because of the nature of the medium that was available. We've seen with using computers that children from very young ages are actually capable of learning to create computer programs to animate an object across the screen and if you're in the process of creating your own computer game – not just playing a computer game that someone else has made for you, but making one, that you can share it with your friends, you can play it yourself, and so on. You need to learn things about dynamics, for example, and so how do you throw a ball? You don't just say, "move the ball to this x-y coordinate and to the next one," if you have the equation for the parabola it moves everything much more gracefully. There is a reason suddenly to want to know that instead of just having to memorise it and spit it back on a test.

KAREN COLEMAN

You are saying it will vastly improve the education?

CAROL STROHECKER

It potentially could but it could do the opposite as well. Again, it comes down to how we use it, so what we are advocating are what we consider to be best practices, having to do with studio-style environments where children and teachers alike are creating things, that learning becomes a creative process and they are making presentations – and I don't mean in PowerPoint especially, but really interactive things where they are engaging text, pictures, sounds and – for communicating with each other. We are creating things that move, they are working with, really, basics of physics when they do that but in a way that they want to. We have kids working with not just text and pictures and sounds, but with gears and motors, little Lego bits and so on, and they are making little table-top constructions of Ferris wheels, dancing dolls, things that move.

KAREN COLEMAN

Where is this happening?

CAROL STROHECKER

It's happening in a number of schools and there is actually a lovely project called Empowering Minds run by a woman named Deirdre Butler, who works through St. Patrick's College at Dublin City University, who has been working with a number of teachers in elementary schools now throughout Ireland. And it's a very important model that she has been developing, I believe, because it's not just a model of computers in schools as teaching kids how to use spreadsheets or word processors or how to do a good search on the Internet, something like that – rather, it's looking at how they think and how can they – through being empowered to use all the power of the computers to actually write computer programmes to make different things happen on the screen – how do they begin to think in different ways?

And the idea is also that if you want to sustain this different way of thinking, the teachers need to be engaged in it too and they are not just spitting back something that the curriculum is prescribing, they have to accept themselves not any longer as the fountain of authority. They become learners too.

KAREN COLEMAN

Yes, because it's changing for them all the time too.

CAROL STROHECKER

Exactly, and if they are not ready to be responsible to the changes as they come along, if they haven't learned enough about themselves as learners, how do they confront new problems? What does that bring up for them? What fears might they have, how can they overcome those? How can they let go of the control that their training taught them they ought to have

in the classroom enough that they can work side-by-side with a child who might even know more than they do sometimes and be able to ask a question in a more egalitarian way? It's a real shift, but we think it's an important one if education is to change and if we are to have a future in which technologies will be used well.

KAREN COLEMAN

So you are saying that the typical classroom as we might know it now, where you have – well, maybe not so much the chalkboard anymore, but the teacher at the top of the class and then rows and rows of desks, you are saying that actually will change considerably, and what, that each child would have a computer in front of himself/herself?

CAROL STROHECKER

No, because we have to stop thinking of computers as what they look like right now. As we were talking earlier with the chips becoming miniature and the sensing capabilities and so on, the objects around us could actually have computational functionalities. My pen, my paper might be dynamic, the – we see these different things on the table, the glasses. We wouldn't need a mouse anymore. The familiar image of a computer as a screen with the keyboard is only one of many, many instantiations through which we might encounter computational capabilities. And as I was saying, these young children and their teachers are working with what look like toys, they are making little dolls and so on, but the guts of those constructions are gears, pulleys, what have you, and those things can be controlled by computer chips or computer programmes that they might write – still, looking at the screen, but which can be stored within the tiny chips in these little Lego bricks, and you have these things come to life in ways that the children are well able to specify and well able to understand and think about. So it's really some ideas about feedback, control systems. It all sounds very foreign perhaps, but what we are seeing is that 10-year-olds can understand these ideas very well and when they do I believe that gives us a sense of promise for the future.

KAREN COLEMAN

What about the likes of English, for example, or one of the languages? How do you see the technology helping the learning process there?

CAROL STROHECKER

Well, it's actually quite lovely because what it means when the children and their teachers are working in this way is that there is no longer a need to create the divisions, the traditional divisions between subject areas that again characterise the conventional education. We need to really rethink how we chop up knowledge, if you will. It's not necessary to do it the same way as perhaps it was in the past. So for example, what they are doing is to make these table-top dynamic dioramas, if you will, and they have narratives about what is being presented so they were working with a model of folklore stories and so on, and they had different characters in myth and legend represented, just the same way that a child might play with dolls or trains and cars on the table, and there are stories about what's going to happen as they go through.

They are writing essays about them at the same time, they are communicating about them, many different kinds of thinking are needed in order to make these things happen. It's also a highly collaborative process, so it's not just one child to one computer sitting isolated in their little desk. They are working around a table together. It's a very different model of how the classroom would be structured. It's more like a studio.

KAREN COLEMAN

It sounds a lot more fun that - - -

CAROL STROHECKER

And why shouldn't it be? Why shouldn't learning be fun? It is from the time we are very young, why should that be beat out of us, so to speak?

KAREN COLEMAN

And this little experiment is going on at the moment out at St. Patrick's at DCU?

CAROL STROHECKER

It's through DCU and St. Patrick's and a woman named Deirdre Butler who will soon be defending her doctoral dissertation based on this work, but she has collaborated with teachers and schools throughout Ireland and there is now a spin-off of this project going on within the Liberties Learning Initiative as well. It will be not just schools-based but community-based as well.

KAREN COLEMAN

But the way, I'm speaking with Carol Strohecker, she is my guest of the week this week, and she directs the Everyday Learning group at Media Lab Europe which is based down at the Liberties, it's the European wing of the Boston-based Massachusetts Institute of Technology, MIT, of course, a very prestigious institute. If you do have questions to put to Carol, do indeed. She won't be with us for much longer so do try to get them in now before the end of our conversation with Carol. It's 6445106 to phone us; to text us, Meteor 057 106106. Just one example of a comment coming in, Carol, I'll read it for you, from one of our listeners who has texted us in to say, "There are families who can't afford a computer let alone Internet connection and then there are other families who can't afford grinds and they are falling further and further behind."

Now, they are very valid points because when you start talking about technology and development it does suggest that there is going to be much more pressure, financial pressure on parents, perhaps to have some of this technology in their own homes. Is there a way out of this? Do you see a situation where parents won't be put under financial pressures in this sense?

CAROL STROHECKER

Well, I think it's one of those questions that will have multiple influences coming to bear and we need to think about all of them. So one, it could be seen as a policy issue where certain Government or foundational supports might enable broader access, is one point. But another is that as we've seen over the past 10 or 20 years, the cost of these capabilities drops down very quickly and again it has to do with the developments where the chips and so on are becoming smaller and smaller and really cheaper and cheaper. As we understand better how to make these things technologically, the knowledge becomes less rarefied and we are able to produce them more and more cheaply.

But even it's a matter of people's priorities as well. I mean, I remember a story about somewhere in the South Pacific where there were people so poor they didn't even have shoes and so on, and maybe there it's so warm maybe that wouldn't be a priority in any case, but they did have televisions in every household and that was the way that they were getting information from the world. That became something that was more important than all the things they might have looked at. So I'm not suggesting that the computer should be the primary thing in our lives but I think that they will become increasingly available, increasingly accessible for people – and actually increasingly necessary as society changes and we do become more a global village.

KAREN COLEMAN

And when you talk about this more innovative way of education and it seems fantastic to have those very innovative tools to help kids to maybe learn English or Maths or whatever it

is, how soon do you think that sort of a system would be actually implemented? I mean, it's very much at the experimental stage there, I can imagine the huge gamut of policies and legislation and problems that one might incur if you wanted to try to put this system properly say through all our schools. Do you have a date when you think this might be implemented, or any idea?

CAROL STROHECKER

No, I wouldn't be able to make a prediction like that, I think that's part of the question that we'll be looking at during the upcoming conference which is related to Ireland's hosting of the EU presidency and we will be bringing delegates from governments and research organisations all across Europe to take a look at questions like these. But really, it's not really a question at this moment of how long it will take, it's are people willing to change the way they think about learning itself, because if you examine how that happens, then you realise we do need different structures to support it, so then it becomes educational change as well.

KAREN COLEMAN

Just before we go, Carol, you are at the heart of the Liberties at the Digital Media Hub. There was much made of that Digital Media Hub when it was starting up a couple of years ago with people in positions of power saying that Ireland was at the driving seat of technology in Europe and we were going to be way ahead of the game. Are we actually that or is it the case that as many fear now, Ireland is really falling behind in terms of technological development? Just take a look, we can't even get proper broadband into all homes and I know people who even have trouble just getting the basic Internet line into their homes.

CAROL STROHECKER

I think Ireland has a wonderful opportunity. I think what was accomplished during the 1990s creates a platform that Ireland could use to move forward and become a true leader but I

think this question of how do people think, how do people learn, how might technologies help us to create new models of learning – that's the only way it makes sense to think about a future. We have to look at kids and how are they learning these days.

KAREN COLEMAN

And what's our record on that so far?

CAROL STROHECKER

I think it's been good from my perspective as an American, but I think that it takes continued work in order to sustain it.

KAREN COLEMAN

Okay, well, there we are going to have to leave it but fascinating stuff. We will of course come back to it during that conference next week, but Carol Strohecker, the director of the Everyday Learning group at Media Lab Europe here in Dublin, thank you very much for coming into studio.
