



DESIGNS FOR LEARNING

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Interview with Diana Laurillard, London

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DIANA LAURILLARD (DL)

Interviewer: STAFFAN SELANDER (SSR)

SSR: *My first questions are related to your carrier. Where do you come from? Why did you end up here?*

DL: *Well, originally I was a lecturer in mathematics. I did an undergraduate degree in philosophy of mathematics, and it wasn't terribly easy to get a job in philosophy. But I was interested in the history of mathematics and philosophy of mathematics, and found a research assistant post on the history of mathematics. But as part of that job I had to teach a couple of hours per week in a polytechnic, although I never particularly wanted to teach, because I thought "it doesn't give anything to me, and I've not got anything to give them".*

But, as I discovered, as anyone does who starts teaching, that it is a tremendously challenging problem. Almost in my first lecture I worked over all that stuff I had seen in my lectures as a student – covered blackboards with equations. And at the end of the first lecture someone asked a question that made me realise they hadn't understood a thing. So I thought: 'Hm, interesting'. That made me think: 'How am I actually going to teach a roomful of 60 students from all sorts of background from all over the world?'

So it was an interesting problem to solve. And then, when I got a lectureship and got more teaching, I used my lecture time as an opportunity to experiment. I wondered how I could get to that point where all the students at the end of the course would understand. And I tried out all sorts of things, problem solving ideas and projects etc. And one thing I did was to use the Open University television programmes, which had some very nice computer simulations with mathematical ideas. And I realized what computers can contribute to teaching.

SSR: *And then you wrote the book about designs for teaching? What ideas did you have when you started to work with that, and what would you say about it today?*

DL: Well, then during several decades I tried out different ideas for teaching and learning, to make good use of digital technology – and watched it fail over and over again. Different technologies come along, different policies come along, different ways of working within universities and schools. It struck me that it did not make education easier for many, many students. We still failed. So, having tried to work at the top level of an institution at the university with the best possible circumstances (the Open University) - and distance education universities care a lot about students getting used to technology - I realised that you have to work with several universities, collaboratively, and that's why I took the job at the Ministry of Education, trying to create a cross-sector e-learning strategy. And then, after three years in White Hall, I realized that it is not going to work that way either!



Part of the problem is that politicians come and go, and civil servants are moving around from one position to another, and because of that, you have to keep starting the argument all over again and again. So I thought that you cannot even change the use of learning technology that way. And so I came back into academic research, in order to solve what I have found to be the fundamental problem, namely to help teachers. Teachers need support, in understanding 'how

to do this', in understanding what kinds of things new technology can offer to teaching. We have very powerful drivers in education: we have the curriculum, the assessment, the quality assurance process, but none of these are oriented towards the teaching and learning you can design with new technology.

Teachers in all sectors are working towards what the system tells them is important, which is not innovative pedagogy. They don't have the time, they don't have the means, not anything to help them. There is no real investment in pedagogical innovation. What I thought I could do was to help them think about teaching in a different way, so part of that book is a polemic about this, about the importance of seeing the teacher as the designer, and seeing teaching as a design science. We have an enormous amount to learn about how to use digital technology in teaching. The technological revolution is extraordinary for education. It does everything from reading and writing to film and telephone etc. So the impetus of the book 'Teaching as a Design Science' was to show how we could provide teachers with the means to create that community of scholars where they could share their ideas – as a problem-solving community. Teaching is not a question of knowing your subject and just giving it to your students – it is a design problem.

SSR: Yes, it seems to be a paradigmatic shift in thinking, also to see the goals of the curriculum as moving targets. Goals are complex, and you can know things in different ways. So it seems more to be a question of giving the students a chance to become competent members in a knowledge domain.

DL: What you have done there is to design a high level goal, to which other goals contribute like knowing enough to be able to debate, knowing enough to be able to debate, with skills like reading, synthesizing, arguing etc. In a way those goals have shifted, in another way those goals have always been in the discussions about education.

SSR: In what ways can research contribute to this kind of development?

DL: I think it a question of action research, collaborative research between teachers and researchers. The way we work with teachers, for example, is to run workshops; we give them a design-tool to work with, then we look at what they produced and how they were producing it, and go back to the design tool and re-design it. And we try to get an opportunity to get lots of people to contribute

design ideas, so that we get enough material to analyse. It should be a very collaborative process, because teachers are the ones that have most information and understanding of the ways pupil learn everyday.

SSR: *And what does that mean in terms of methodologies?*

DL: *Observation is important, in observation you actually see what they do. We have the benefit, of course, of having research tools and design tools. And when teachers are using that, they are discovering something themselves, about the way they teach and the way they reflect, and the way they could think. But the critical thing is the learning design (or lesson plan) they make. 'Design' is for making the world a better place to be in. It is not 'science'; it is not 'art'; it is a problem-solving activity to making things better. The nice thing about our design tool is that we get feedback about each teaching-and-learning activity. So instead of having a Likert-scale of whether teachers like it, we get lots of high-level qualitative data about how they actually use it.*

SSR: *An emerging discussion is about learning in schools and learning outside schools. Perhaps we have to change our way of teaching because some of the things we teach in schools they – the students – already know, or they find it just dull even if they do not know it.*

DL: *Well, I find this debate a bit worrying, simply because it seems that we just discovered that students have a life outside the classroom. They have always developed their own skills, they have always done informal learning. And we have never thought of going to talk to them in coffee-bars and the like, but thanks to new technology, that is what we want to do now.*

It is true that there are lots of ways to find out things on the net, and students are pretty good at finding their ways around it out of their own interests – but that happens anyway, informal learning happens anyway. That is what any individual who is half awake does throughout their lives. It is not the educationist's job to do any of that. The job of the educator is to enable people to do what they can't do anyway, on their own. It is about finding ideas they had no idea existed, to find out how to study science or art or engineering or business. For example, there is a lot of information about climate change on the net. But what you need to understand it is a curriculum and guidance through how to

understand that, that tells you what there is to know. That is what teaching is for, to make that understandable.

SSR: I talked to a professor in physics who said: “Why do schools use the ball rolling down the plane when they instead could talk about the expansion of the universe. It is all about mathematical principles”. Traditions instead of interest?

DL: That is a part of the curriculum that is not useful as such, the expansion of the universe. Yes, use that! But besides that, you have to understand balls rolling down the plane as well. But of course there are different ways of teaching it. For example, you could design a game, which involves some kinds of activities in a virtual world which use all that information about acceleration and mechanics etc., but in order to make that game work, the students have to understand the basic principles of mechanics. So you come out with quite traditional educational aspects of the curriculum. But they have the active control over how to understand the rolling ball on the plane.

SSR: Another thing relates to what could be phrased as the computer rain over schools (like in Sweden). And then we can find that the teachers allow the students to use the computers to learn things, but then when they are tested, they are tested by paper-and-pen.

DL: True, we have to change that and develop a new policy of assessment. But also change assessment agencies, which is a much more risky business, because you will have the parents on your back and so on. Changing those things in education is really quite hard to do. And therefore you always fall back on a very slow reformation process. So we are decades behind what we could be doing. It is a whole system that has to engage the government and the stakeholders and so on. And now we have a government that does not even believe in technology in education.

SSR: It would be a very strange situation if the schools were the only place in society where we do not use computers.

DL: And we are the only country in the world, which is trying to do that. But what is good now in the UK is the change in direction to de-centralisation. We

have had a very strong top-down governing of schools, which is now changing. However, we still have a top-down assessment system.

SSR: What do you think about the use of simulation in schools?

DL: Well, simulation is a micro-world, but if you can create a micro-world showing the principles of for example natural selection that would be of interest, because that you cannot see that in the real world by yourself. But it is difficult still for teachers to make their own simulations. Logo was one example of how you could find out about, for example, the mathematical principles of a triangle. Simulations are a very good way to use learning technology. A simulation can be used to create an understanding of climate change. Designs of learning technologies of that kind would, of course, be very interesting to create in relation to the curriculum.

Tools for Designing Mobile Interaction with the Physical Environment in Outdoor Lessons.

Johan Eliasson, Department of Computer and Systems Sciences, Stockholm University (2013).

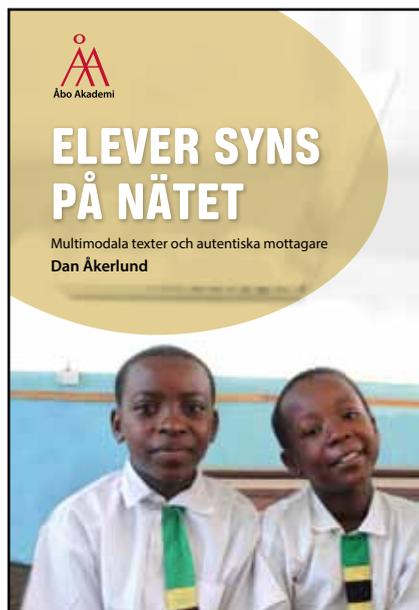
In his thesis, Johan Eliasson focuses on design for mobile learning. The thesis suggests that interaction with mobile technology in outdoor lessons may distract students from interacting with the physical environment. Approaching this challenge from a human-computer interaction perspective, Eliasson presents four different design cases in geometry and biology. The design cases are developed through a concept-driven design approach and evaluated on field tests with primary school students. The thesis proposes guidelines for design, a design model and design concepts for designing outdoor lessons. These are proposed as tools for researchers and designers to take the challenge of distraction into account in designing mobile technology for outdoor lessons.



*Elever syns på nätet – multimodala texter och autentiska mottagare
(Students seeing each other on line. Multimodal texts and authentic audiences)-*

Dan Åkerlund, Åbo Akademi, Vasa (2013).

In his thesis, Dan Åkerlund investigates new opportunities for learning when pupils express themselves through multimodal texts and communicate these to a broader audience outside of school. His main interest relates to pupils' multimodal text productions and pupils perception about their own learning when their schoolwork becomes public on the Internet. He has studied classes that use Skype and classroom blogs for sharing and communicating their texts. A cross-disciplinary approach is used and Åkerlund combines theories from different fields such as pedagogy, communication and media. His thesis contributes to a deeper understanding about text production in a ubiquitous computing environment, for example he show that access to digital resources and the possibility for pupils to publish their work online changes and creates new opportunities for telling a story that traditionally hasn't been practise in schools.



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