

## Elliot Soloway, Arthur F. Thurnau Professor University of Michigan, USA



### Why is Eliot an important expert witness?

- ◊ For the past 15 years, Soloway and his colleagues in the Center for Highly Interactive Computing in Education have been exploring the new opportunities for teaching and learning afforded by computing technologies.
- ◊ Taking advantage of the recent emergence of mobile, wireless, handheld technologies – now the cost of a pair of tennis shoes in the States – Soloway and his colleagues are developing scaffolded learning environments based on this new technology that support gains in achievement and motivation.
- ◊ In 2002, Soloway was selected by University of Michigan students as the winner of the Golden Apple Award as the Outstanding Teacher of the Year; in 2004 and by engineering students as the Outstanding Teacher of the Year in UM's Electrical Engineering and Computer Science Department.

### Key ideas

1. Leverage the existing infrastructure and stop buying computer labs!
2. Make available mobile tools that allow children to be content creators as much as they are content consumers.
3. Have a really active dialogue between the standard setting body (the government), the educational and IT industries and the schools about going to scale with handhelds.

### 5.3.4 More about Eliot, his work and ideas

Eliot's research work into the use of handhelds in the classroom started in 2000 and started as very small scale research project. Now 38 states in the U.S., 5 countries around the world are using hand helds and 20,000 seats of software devised by his team being used. >><<

### 5.3.5 What does Eliot say is the impact on learning of hand held use?

- ⊖ *A move to active learning*
- ⊖ *Learners as producers rather than consumers of information*
- ⊖ *A deeper and more motivational experience for learners*

‘I think that what we are starting to see is a more constructivist... a more active learning [.....] kind of classroom where the children are engaged in artefacts production on a constant, continual basis. And that’s a change from more of a ‘sponge’ kind of model where you’re absorbing content, to a model where you’re actually producing content. They talk about the children today as the ‘Remix Generation’ – R-E-M-I-X - they hear the music and they take the music and they change it and they piece it together. Well I think that middle of the Remix Gen is really a model that is a metaphor for this transformation of the classroom that the children are being producers, they are no longer being consumers and that’s a fundamental shift.

I think the idea.... historically in school children are given assignments like ‘take a country and write a report on that country’ or ‘take a science process, for example the water cycle and write a report about the water cycle’. So these traditional reports, the traditional projects which the children would undertake, they would use pencil and paper by and large and they would be pretty perfunctory, now are starting to be multi media projects that extend over multiple days, multiple weeks where children can bring different media to bear on that project.

So what’s exciting, teachers can use the existing curriculum but the kind of activity that gets engendered around that activity is a much more robust, much richer kind of experience for the kids.

### 5.3.6 What does Eliot say are the enabling conditions for this kind of learning?

<i>Realising gains in achievement don’t happen in the first year,</i>	Teachers are still trying to figure out how to use them, so first off don’t expect gains in achievement the first year. You’re going to see it in the second or third year as the teachers become more adept and more expert.
<i>One-on-one personal model or an extended model of use</i>	It has to be what we call the ‘personal’ model not the ‘rotational’ model. If you rotate the handhelds, children get sporadic access. You’re not going to see any change, because children won’t see them as their own personal tools. It’s sort of like the rental car, I mean they won’t treat the devices well and they won’t make the effort to really become comfortable with the tool. They know the tool is going to be taken away from them. So I think one of the conditions is it really has to be a personal model or a model where the children have an extended use of the hand held - two weeks, three weeks, four weeks so the children can invest their time in learning how to use these tools So that’s the second condition.

<i>Depth of learning, not breadth</i>	[...] So I think that trying to do curriculum in depth is the third condition under which you're going to see improvement.
<i>Social, school wide factors</i>	If the culture of the school says that innovation, risk taking, experimentation is OK. That the Principal and the Superintendent and all the administrators say 'It's OK to try something' and then try it again. Because then if the first time that you do it you're not going to be successful. But it's OK to fail as long as you really learn from what you're doing and revise.
<i>Teacher professional development</i>	'All of the data, all the literature says if you don't have professional development it doesn't work. And our experience with the handhelds really bears that out. Those schools which have decided to put professional development, those are the places where the programme is really working. But in those schools that said 'Oh we don't have the money for professional development, we're just going to unload the handhelds on the teachers you're seeing a lot of struggle'.

### 5.3.7 What factors have enabled scalability of handheld use?

'We don't see it in terms of schools anymore; this really is a national effort that's starting to roll out. to something that has now become scaleable'.

Eliot describes for us the 'bunch of factors that came together over the last five years' making hand held computing for learning a real possibility'.

These seven factors are:

⊖ **Factor 1**

*'A range of devices available at a range of price points'.*

⊖ **Factor 2**

*'Growing availability of a range of task appropriate education applications.'*

⊖ **Factor 3**

*'Management tools for handhelds.'*

⊖ **Factor 4**

*'Teacher adoption for direct use in the classroom'*

⊖ **Factor 4**

*'Evidence of student achievement'*

⊖ **Factor 6**

*'Scaleability'*

*Can you really roll this thing out to large numbers of students? And what that takes is really an infrastructure, that means that companies like Dell and Palm, they really know how to roll them to a school district and sell it on a district wide level as opposed to sell it on a classroom basis. And I think that what we're really starting to see is infrastructures in school districts – for example in your Wolverhampton you're really trying to do that. And I think in South Africa that's the ....probably one of the weakest parts is that they don't have an infrastructure, so their infrastructure there will probably be the cell phone and Telkom infrastructure. And there is a very rich infrastructure for Telkom and cell phones there and that's how it's going to happen there. And that's how the scalability will piggy-back off of existing infrastructures in South Africa.*

*Factor 7*

*'Public demand.*

Full transcript of Eliot Soloway Expert witness interview Appendices

**5.3.8 How relevant is Eliot's experience to the context of rural schooling in the Eastern Cape? Is there any other evidence within Southern Africa of the potential of hand held computers to support learning?**

Several pilot programmes are already being carried out with mobile computers, for example the bridge.org projects in Cape Town and Soweto to support the work of health professionals. Bridges.org the sponsor of these pilot programmes has also carried out handheld pilot, SATELLIFE, in Ghana, Kenya and Uganda (bridges.org.2001). Its main findings included 'held computers are an appropriate technology for use in the African context'.

Much nearer to home, the Digital Education Enhancement Project has made some use of handhelds and lap tops computers and the initial findings suggest that given the enabling conditions, mobile devices can contribute to teaching and learning in primary schools in the Eastern Cape.