



## **INTERNATIONAL CONFERENCE ON 1 TO 1 IN EDUCATION**

**Vienna, 22-24 February 2010**

### **Conference summary**

#### **Monday 22 February**

The conference opened with opening remarks from the representatives of the four organisers, viz., the Austrian Ministry of Education, the World Bank, the Interamerican Development Bank and the OECD/CERI. The presenters explained the reasoning behind the organisation of the conference and the importance and increasing prevalence of 1:1 computing initiatives in very diverse countries from around the world, both developed and developing. These initiatives are seen as an opportunity for promoting educational change within schools and classrooms. They also raised the question of whether such models can be considered only as a new input in education, or should be thought of as innovations or disruptive changes that require systemic and holistic approaches for their successful implementation

Overarching issues and questions regarding 1:1 initiatives were raised in hopes that the presentations and discussions in the main part of the programme would help bring answers. Some of these questions referred to the impact and costs of 1:1 initiatives, and, crucially, ways to measure these. The issue of the environmental impact of these programmes was also raised since they require a large number of devices. At the same time, it was made clear that the conference did not only concern 1:1-computer or laptop programmes, but that, included in the definition of 1:1, there were many types of devices, such as mobile phones. The importance of context was also stressed; countries or regions may have different educational or social priorities and goals which need to be taken into account when reflecting on the most appropriate ways forward. Additionally, 1:1 initiatives should be taken into consideration in the context of the more general debates on the use of new technologies in education, with many common issues arising. For example, we know that teachers are fundamental in the effective use of these technologies in classroom; one cannot expect children and adolescents to make use of them on their own without appropriate pedagogical support.

In addition, the conference would provide a peer learning opportunity for participants, as it included countries with long experience in 1:1 and others who may have just embarked or are considering embarking in such programmes.

**The theme of the first panel session was monitoring use and results of 1:1 initiatives; in other words, how do countries know what is going on in the field? Speakers on this panel included Gilles Ribaux, of the Eastern Townships Schools Board in Canada, Carmen Martínez Urtasun, of the Junta de Aragón, in Spain, Oscar Bercera, of Una laptop por niño, Perú, Alfons ten Brummelhuis, of Kennisnet in the Netherlands and Ami Volansky, from the Tel-Aviv University in Israel.**

The first three speakers focused on programme evaluations of 1:1 computing programmes that have been recently rolled out in their respective countries or regions. Programme evaluations generally concentrated on gathering evidence on issues such as when and where students use the devices most frequently and for what subjects, what type of use teachers mostly made of these devices as well as the students' and teachers' views on the initiatives (which were, on the whole, positive). The last two presentations focused on more general issues concerning programme evaluation, both on 1:1 but on other types of ICT use as well. The discussion that followed focused on issues of programme monitoring and evaluation with questions addressed to particular speakers regarding aspects of their own programmes as well as more general topics such as the links between 1:1 initiatives and the pedagogical competencies of teachers.

**The theme of the second panel session was teacher and student support. Speakers on the panel included: Alicia Banuelos, of San Luis Digital, Argentina, Francesc Colomé, of the Generalitat de Catalunya, Barcelona, José Vittor Pedroso, of the Ministry of Education, Portugal, and Riina Vuorikari, of the European Schoolnet in Brussels.**

Speakers focused on different types of support provided to teachers and students but also to parents for the effective use of 1:1 devices. Ms. Vuorikari presented a new pilot project currently being implemented in six European countries examining the support of teachers in the use of netbooks through pedagogical scenarios. The discussion that followed focused on the different types of support available to teachers and students and its effectiveness. Providing classroom support was viewed by the panel as being essential and very effective. The existence of social networks allowing for more informal collaboration among teachers was also considered invaluable. Mr. Colomé also voiced the view that support to teachers needs to be tailored to their level of skills and competencies, if the support is too easy or too difficult it is unlikely to be effective. Although the presentations and discussion of this session were quite rich, it was noted towards the end that little attention was paid to student support.

**The third panel session was on policy expectations and the reasons why countries invest in 1:1 initiatives. Speakers on this panel included: Bette Manchester, from Maine, USA, Fernando Brum, of Plan Ceibal in Uruguay, Joao Pedro Ruivo, of the Technological Plan for Education in Portugal, John Kershaw, from New Brunswick in Canada and Rodrigo Arboleda, of the OLPC Foundation.**

A variety of rationales behind the investment in 1:1 programmes was offered by the speakers, depending partly on the social and political context of the countries or regions concerned. For instance, in Uruguay equity of access to ICT was deemed more important than educational issues, while in New Brunswick 1:1 programmes were considered beneficial for a variety of reasons, including facilitating personalised

learning, teaching and learning of students with disabilities, student empowerment and shifting pedagogies towards the teaching of 21<sup>st</sup> century skills. A number of speakers pointed out that, given the very low cost of some devices the question for policymakers should not be “why invest in 1:1?” but rather, “why not?” The discussion that followed focused partly on the implications of 1:1 programmes on assessment and how this relates to the assessment of 21<sup>st</sup> century skills. In addition, representatives from the OECD and the World Bank lamented that reliable evidence on impact and cost-effectiveness of these programmes was still not widely available. These two issues, however, were going to be discussed in the context of two separate panels on subsequent days of the conference.

## **Tuesday 23 February**

The second day of the conference opened with a keynote speech by Professor Peter Baumgartner on new teaching and learning models emerging from 1:1 computing. One of the main goals associated with the introduction of 1:1 computing in education is the change of learning and teaching practices of students and teachers. But, *what direction should this change follow?* There is a tacit assumption behind most 1:1 initiatives that learning is an active process. Equipping every learner with such a powerful tool as a computer or a handheld device implies the recognition of his/her active and central role in the process of learning. Having a device facilitates children’s cooperative learning with peers as well as self-directed learning and a permanent and individualized evaluation. However, the introduction of ICT devices in the classroom will not automatically lead to the emergence of this kind of practice in teaching and learning. As the representatives of the 1:1 initiatives participating in the panel underlined, the teachers’ competence and motivation are fundamental for this change to occur.

**The first panel session of the day was also on the topic of emerging teaching and learning models. The panel’s speakers were: María Helena Cautiero and Franklin Coelho, of Piraí Digital Initiative in Brazil, Kirston Panton, of Microsoft, Jeong-hee Seo of KERIS in Korea and Roger Doucet, from New Brunswick in Canada.**

Most of the 1:1 initiatives across the world include some training or support for teachers in their transition to ICT use in novel situations. Although on-the- job training has been reported to be fundamental for the use of ICT devices in the classroom, there is not much evidence about real changes in the pedagogical practices within the classroom. Kirston Panton defended the idea that challenging the teachers (their “comfort zone”) is the only way of making them more aware and committed to the pedagogical potential of ICT in education. Roger Doucet reported that, in New Brunswick, collaboration among teachers was considered essential. Mentors were also used as pedagogical leaders of the schools and they became active promoters of change. It is also worth noting that one of the main barriers for this kind of work tends to be the lack of 1:1 computing in initial teachers’ training, as is the case, for example, in Brazil.

In summary, it seems that the change of teaching practices within the classroom requires something more than the introduction of technology or the distribution of computing devices to all. It requires enabling and persuading the teachers, with training and incentives, to revise and change their practices in order to be more effective. Once more, participants noted that not much was said about students’ learning practices.

**The second panel was on the impact of 1:1 programmes on student outcomes. Speakers on this panel were: Paolo Ferri, of the State University of Milan, Italy, Patricia Sierra, of the Fundación Piés Descalzos, in Colombia, Jordi Pàmies, of the UAB, in Spain, Bruce Dixon of Anytime, Anywhere, in Australia, and Richard Rowe, of OLE Nepal-Rwanda.**

No consistent evidence is available about the impact of 1:1 initiatives on students’ achievement. Some small scale initiatives and pilots have implemented evaluations using standardized tests in (quasi)experimental conditions, but their results are difficult to scale up (Fundación Pies Descalzos of

Colombia and UM in Italy). Most of the large-scale 1:1 initiatives have produced evaluations that measure only the level of satisfaction of the users, such as the one reported by Jordi Pàmies but they do not provide estimates of the impact the programme has on academic achievement. Richard Bowe attributed the lack of supporting evidence to the limitations of the evaluations but also to the limitations of the programmes. In this sense, he underlined that the central question of the debate about 1:1 was *how to do it?* It is senseless to try and determine what the effect of a 1:1 initiative could be. The question is what kind of 1:1 can really improve student achievement? More evidence on the impacts of 1:1 computing on student achievement is necessary. It will be especially interesting to assess the achievement of the students in the schools or areas where the programme has been put into place.

Finally, one of the consensuses emerging from the debate was the lack of accurate measures in the current evaluations for the so-called 21<sup>st</sup> century skills. When justifying the introduction of 1:1 computing in education, a lot of stakeholders mentioned the acquisition of the skills of the 21<sup>st</sup> century among one of the main reasons for the investment. We cannot evaluate the real impacts of this kind of programme without the adequate questionnaires and indicators. Many participants showed their interest in collaborating in designing standardized measures for 21<sup>st</sup> century skills.

**The final panel of the day was on the impact of 1:1 initiatives on equity and on bridging the digital divide. Speakers included: Angela McFarlane, of the University of Bristol, UK, Cecilia Alcalá, of Paraguay Educa, in Paraguay, Ian Halpin, from Becta, UK and Giulia d'Amico, of the OLPC Foundation Europe, in Belgium.**

The initiatives of 1:1 computing in education have the potential to reduce the digital divide in the access to ICT between rural and urban areas, developed and developing countries and among social groups. Especially in developing countries, where the access to ICT is very low (such as Paraguay), providing every child with a computing device can make a difference in the access of these communities to technology. In developed countries, where at home and at school access to ICT is much more common, these initiatives are less frequent and not always universal (targeting). In the case of the UK, guaranteeing access to ICT for students from disadvantaged backgrounds has been seen as an equitable and economically efficient policy. Access to ICT at home by the social disadvantaged groups was estimated to multiply by five the social returns of the investment in the programme.

Despite the fact that 1:1 computing seems to be a very effective policy in reducing the digital divide in the access to ICT, much less is known about its use. Angela McFarlane was one of the voices suggesting that new forms of educational inequality could be emerging from the use of ICT devices. The social background of children seems to condition their interest and ability to use ICT devices. These different social patterns in interest and use of the technology could be generating the emergence of a second digital divide between social groups. One of the questions that were raised during the debate that followed the speakers' presentations was whether it was advisable to have ICT as a specific subject at school. Learning ICT skills transversally facilitates a more meaningful and engaging use of it, but learning these skills specifically can also be very interesting because it ensures the minimum level of skills across all social groups.

### **Wednesday 24 February**

The final day of the conference opened with a keynote speech by Miguel Nussbaum, of the Universidad Católica in Chile, entitled: *Looking into the future: the importance of applications and quality content*. He presented programmes developed around the 1:1 model (including a low-cost 'one mouse per child' programme, developed specifically for India) and how these can be used in innovative ways in order to bring about change in the classroom rather than maintaining the status quo with the addition of technology. He also focused on the barriers to change, which he divided into three groups:

- first order barriers, including barriers related to teacher training, equipment, web access and vision and leadership for ICT implementation;
- second order barriers, i.e. those related to lack of confidence in using ICT by teachers, personal attitudes and competencies and plasticity in their pedagogical practices; and
- third order barriers, which relate to the fact that students need a space to think and reflect while teachers at the same time need to maintain the classroom pace and cover curricular needs.

**The final panel of the conference focused on costs and whether 1:1 programmes are worth the investment. Speakers included: Franz Kühmayer from Austria, Oystein Johannessen, of the Ministry of Education, Norway, Alejandro Piscitelli from Argentina, Robert Fogel from Intel, Charles Fadel from Cisco.**

Several participants made the observation that the challenge in education is not technology but education itself. Charles Fadel was very clear when he defended the idea that following the current pace of technology is not an option for education. The educational system needs some coherence, clear goals and leadership. Initiatives such as 1:1 computing cannot be implemented or evaluated without taking into account the institutional framework where they are embedded. Oystein Johannessen remarked that in Norway 1:1 is a means to an end and not an end in itself. So, at the end, the question continues to be “is 1:1 computing going to contribute to change in education?”

The conference ended with talks by the three representatives of the three organising international organizations, IDB, WB and OECD/CERI. Eugenio Severin, of the IDB, summarized some of evidence available about the impacts of 1:1 in education. The primary positive effect of these policies is the improvement of the engagement and motivation of the learners. No concluding results about the impact on academic achievement were found, and no substantial change has been detected in the learning and teaching practices. Mr. Severin asked for more attention to be paid to educational practices and evaluation tools for the achievement of 21<sup>st</sup> century skills. Mike Trucano, of the World Bank, asked for more self-criticism and transparency when providing information about the total cost of the programmes and noted that discussions around planning, rolling out and measuring the impact of such initiatives would benefit from including a wider range of critical voices. On a similar note, Francesc Pedró, of the OECD/CERI supported Mr. Trucano when saying that the question of cost/effectiveness has not been resolved. Mr. Pedró announced that the PISA assessment cycles are changing so by the middle of 2011 the OECD will publish the first report on electronic reading. In 2011 some countries will start taking the assessment online. The ambition is that 21<sup>st</sup> century skills be incorporated into the PISA assessment as of 2015.

*Most presentations are available on the conference's website: <http://nml.bmukk.gv.at/>*

*You may also be interested in the IDB's blog, which contains links to the sites of several country initiatives:*

<http://ict.iniciativaeducacion.net/2010/02/international-conference-on-1-to-1-in-23.html>

