CERI CONFERENCE ON INNOVATION, GOVERNANCE AND REFORM IN EDUCATION: SUMMARY REPORT

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SUMMARY REPORT

1.   The Centre for Educational Research and Innovation (CERI) at the OECD hosted a conference in Paris on 3-5 November 2014 entitled "Innovation, Governance and Reform in Education". Around 200 delegates and experts from member countries, representatives from other international organisations, members of the project networks, and the social partners BIAC and TUAC gathered in Paris for this event. The conference covered overviews of CERI analyses, several transversal themes, CERI project highlights and the future of learning systems. The remainder of this note summarises the key messages from each session.

1. Welcome and Opening

2.   In his opening remarks, **Stefan Kapferer (OECD)** underlined the importance of the CERI conference given the focus in the last decade on skills and education as key components for social cohesion and the economic health of societies. He noted that in most countries, weak growth and high unemployment rates, especially among youth, have resulted in an increasing distrust of governments, policies, and the opportunities society and education systems have to offer. In light of this, the conference was particularly relevant, and would provide interconnections between innovation, governance and reform.

3.   Mr. Kapferer also emphasized the importance of discussing new ways to help young people develop skills that are relevant to the rapidly changing demand in the labour market – namely creativity, problem-solving and critical thinking, as well as working in a collaborative manner and with new technologies – so as to improve the performance and well-being of whole communities in countries in global competition. Talking about how to implement innovation in education is thus key and necessitates a reflection on governance, since innovation is often initiated by teachers and schools, but not always by the administration or governments. The Deputy Secretary-General concluded his talk by stressing the need to find new methods for encouraging governments to improve innovation processes in education systems.

4.   His speech was followed by **Dirk Van Damme (OECD)** who highlighted the growing positive impact of education on various social outcomes. He noted, for example, that individuals with higher levels of education are more likely to have a say in government, contribute to the well-being of society and be more trusting. However, considerable challenges lie ahead in terms of equity, quality, efficiency and social mobility, which are magnified by the central status of education. The cost of education is increasing, resulting in a widening gap between opportunities and expectations that most countries do not have the capacity to deal with. Likewise, governments have to do more with fewer resources, which is intensifying political and ideological differences. Innovation could be part of the answer, and therefore it is important to reap the potential benefits of technology.

5.   Similarly, teaching and learning need to be adapted to 21st century skills demands because schools are not sufficiently preparing students for non-routine and deep thinking tasks. There is a disconnect between what education systems are delivering and what economies are expecting. It is thus crucial to align pedagogy with the recent research evidence on learning. A general perception of slowness of reform and resistance to innovation in education systems is prevalent, so one central aim of the conference would be to think about ways of making the progress of innovation and reform more effective and powerful. There is evidence from the CERI projects that innovations are taking place in classrooms and schools. Innovation is meant to improve quality and equity of learning outcomes, improve efficiency and adapt to changing societal needs.

6.   Misconceptions about innovation in education result from divergent views on governance. It is therefore crucial to examine how contemporary governance challenges in education could be

conceptualised and understood. Complexity provides one part of the answer as it is an element in education with increasing decentralisation, deregulation and school autonomy. But some countries have recentralised decision-making and no longer give much legitimacy and authority to the local level. With the multiplication of governance levels, choice and competition, as well as actors and stakeholders, including parents and civil society, getting the balance right is important. Four themes constitute the heart of the debate: trust, accountability, professionalization of teachers and leadership. Knowledge surrounds all these themes, especially how schools function as organisations and how systems could be better organised. For instance, trust is essential for establishing conditions for effective and sustainable innovative change. It can facilitate open communication and interactions, enable stakeholders to take risks and reduce the need for control and monitoring. The future lies in strong professional accountability with multiple stakeholders. Teacher professionalism also plays an important role, for teachers, if viewed as professionals, could radically change the governance of education systems. And processes of innovation critically depend on leadership for change. The conference would raise a number of questions around these themes.

Figure 1: Key themes of the conference
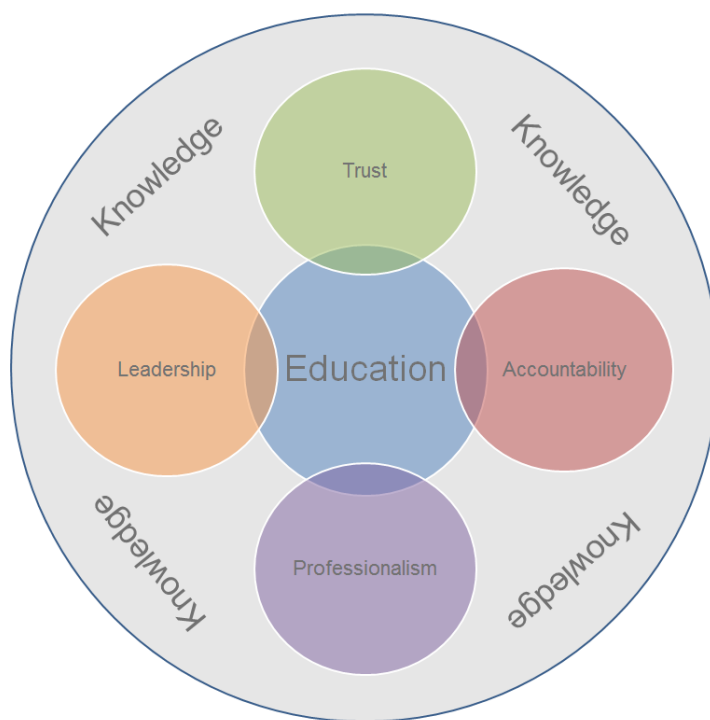
Source: Dirk Van Damme.

2. Overview of CERI Analyses and Findings

7.   The second session started off with a short introduction by the project leaders to the work most featured in the conference, **Tracey Burns**, **Sonia Guerriero**, **David Istance** and **Stéphan Vincent-Lancrin (all OECD)**. After the general introduction, Stéphan Vincent-Lancrin stated that a successful innovation strategy would need to allow for radical innovation, which requires actors from the margins. The more the approach is towards radical innovation over incremental improvement, the more tensions are created. While good governance is complementary to successful innovation, there is also potential for tensions between governance and a system's ability to innovate. Tracey Burns added that while innovation is by definition positive, governance does not have that luxury as governance systems have to be able to accommodate failure. In finding out what works and what does not, governance systems tend to be risk-

averse since particularly highly accountable systems often leave little room for failure. To ensure strong governance without hampering innovation is a balancing act. In resolving this tension, horizontal accountability is a key element and how to strengthen it remains a research topic. Horizontal accountability brings more actors to the floor of education, whose aims are not necessarily in the same direction.

8.   The audience questioned, for example, the role of parents, who often strongly support innovation in education, but tend to be reluctant when reforms affect their children as often the most sophisticated education institutions tend to be the most conservative in terms of innovative practices. On the question of how to implement new forms of governance and accountability, it was suggested to look beyond education to sectors such as health, but also to business and industry more generally. The indicators for educational success are still too often limited to easily measurable metrics while overlooking social components. The users of the education systems themselves should be drivers of innovation and the urgency of the need to innovate must not be underestimated.

9.   The panellists agreed that the teaching profession is central in reconciling the different actors and their perspectives and setting free the powers of innovation. If the teaching profession is to become central to innovation, autonomy is important. In a setting of autonomy, the profession could develop a sense of responsibility for school issues – and with a collective responsibility for education comes accountability. In many top education systems, the teaching profession is confident enough to engage with multiple stakeholders to foster innovation. Nevertheless, in many systems the structures and incentives to build the teaching profession are not yet in place. In some education systems, teachers are reluctant to pay for participation in professional organisations. Here, policy-makers and unions need to build capacity, facilitate collaboration among teachers to ensure diffusion of best practices and provide the teaching profession with incentives to drive innovation. While the issue of the costs of professionalization is important and which actors are to bear them, the cost of staying in the status quo when it is known not to work is high, Tracey Burns described.

10.   Another topic touched upon was the benefit of collaboration on an international level. It was noted that while education systems are very diverse in their challenges, the basic questions are shared by all of them. International co-operation in education should build on the similarities while acknowledging the differences. On the international level, countries come up with different definitions of the same concepts; bringing harmony to those is a great step ahead. David Istance added that there is now a strong focus on gathering international data, but that the effort put into their interpretation could be increased, which would constitute a powerful lever for change. Nonetheless, while diffusion of knowledge is important, it is not a panacea for all problems.

3. Key Transversal Themes

3.a Knowledge-intensive Governance, Innovation and Change

11.   In this session, speakers and participants focused on the demands for knowledge creation, mediation and use that could feed into innovation and systems of decision-making and policy change. The first speaker, **Rien Rouw (The Netherlands)** presented the approach of collaborative learning, a principle underlying a series of initiatives that were started at the ministry level in the Netherlands after a parliamentary investigation found that policies in the 1990's were not based on evidence. But two challenges impact this initiative. First, there are many influences on policy making (e.g. media, lobby, time pressure, research, ideology, bureaucracy, personal relations, colleagues, elections, the opposition and platforms). This is why beliefs and deep understanding have to be main focus areas. At the same time, complexity is inherent to education decision-making. This requires quick-thinking, holistic approaches to situations and intuition, and good judgment in addition to evidence. Actors need to have all of this in their heads; it has to be part of their capacity. A way forward is collaborative learning between researchers and

policy-makers – through experimentation, i.e. trial and error as a source of improvement, and by building coalitions that allow combining multiple perspectives.

12.   **Philippa Cordingley (The Centre for the Use of Research and Evidence - CUREE, United Kingdom)** then spoke about how knowledge in and about education is effectively created, mediated and used. Current technical innovations have helped to carry out meta-analyses of a large number of research findings, and big data sets, such as PISA, have led to a new focus on impact. In addition, there is an emerging consensus that both qualitative and quantitative methods are needed to generate good knowledge. Nonetheless, a number of problems have emerged, including the status, funding and focus of research. For example, while the writing and editing for research journals is fuelled by public funds through the efforts of researchers, all the income and profits reside with the publishers. Research for creating generalisable knowledge inevitably tries to reduce real world complexity by isolating key variables. Some large scale research findings languish on library shelves because they are not communicated in ways accessible to practitioners, and are just too abstract for translation into day to day practice. Without additional mediation they are often not used because they represent too demanding a learning curve. IN CUREE's extensive experience, overcoming these obstacles means conceptualising knowledge use as work based professional learning; it means mediating knowledge so that teachers and schools can connect it with what they know and do already and making it fun, visible and engaging. The best moment to infuse new, research based knowledge into both policy and practice process is the planning stage – the moment when we think most deeply and are most open to new knowledge.

13.   **Dirk Van Damme (OECD)** pointed out three mind-sets that influence the wider discussion. First is the idea that there is not enough knowledge, so there has to be more research and more professional development. Second is the argument that there is a lot of research being conducted and disseminated but it is not always the right type of knowledge. Third, whatever knowledge is produced by the research, it is always the work of outsiders while it is the insiders who really know best (an attitude very dominant among teachers). Teacher knowledge, however, is always very partial. Therefore, co-ordinating knowledge systems seems to be the best answer. Teachers need to be 'reflexive professionals', and for this their capacity to access complex and different knowledge types has to be built.

3.b The Challenge of Complexity: Rethinking Relationships and Approaches

14.   This session explored the implications of complexity for approaches to education analysis and change, and examined whether and how existing models of governance, accountability and reform could more adequately reflect the growing understanding of complexity. The first speaker **Dahle Suggett (Australia)** presented three Australian case studies that modelled how local networked solutions can be found for complex problems such as persistent low school performance and catering to an increasingly diverse and challenged school population. These schools realised that they function best when they see themselves as part of a community whole with many interacting elements and take multiple small steps and are prepared to 'learn as we go'. These processes cannot be simply captured in a conventional strategic plan but need organic flexible planning, strong partnership agreements and a clear understanding of schools' responsibilities as the centre point in a new learning system. New administration tools are needed in terms of localised agreements and localised data and it is important to realign rules and remove barriers in order to rethink industrial and regulatory environments.

15.   **Gábor Halász (ELTE University, Hungary)** then focused on the complexity of development interventions by providing an example from the education sector in Hungary. Complex problems differ from complicated ones in terms of differences in predictability and control. Complex problems are made up of *probing* (i.e. trying out what works, using experiments), *sensing* (i.e. interventions are producing different outcomes, unexpected patterns of institutional behaviour are emerging, local capacities and prior

experiences determine impact, self-generating developments are unfolding in time) and *responding* (i.e. customising according to local capacities, supporting institutional level learning capacity, scaling up though horizontal knowledge transfer). The example of EU co-funded curriculum development interventions in Hungary illustrated that in a complex environment interventions do not always lead to desired changes and interventions that are good for some schools are not necessarily good for others.

16.   The discussant **Christiane Arndt (OECD)** explained that sound regulatory policies and governance help to address complex policy problems. Regulatory impact assessments should be discussed with those who will be affected by a planned regulation, which is not always the case. Especially in complex areas, consultation with stakeholders helps regulators better understand the impact of regulations including unintended consequences. Research by Cary Coglianese and Evan Mendelson from PennLaw seems to suggest that self-regulation may be appropriate when the government lacks ready access to information about regulatory problems and their possible solutions, precisely the kinds of complex circumstances where more conventional forms of regulation face their greatest challenges. It is also important to share knowledge and have collaborative systems in place across layers of government and internationally because many regulations are not only affecting one policy field or layer of government. Christiane Arndt also pointed to some other relevant recent work at the OECD on governance including networks to share innovative practices, and the work on Making Reform happen with a chapter dedicated to reforming the education sector.

3.c The Digital Revolution? Impact on Educational Innovation, Reform and Governance

17.   The session discussed implications and questions about the nature of innovation, governance and reform in education related to the digital revolution. It opened with a presentation by **Alexa Joyce (Microsoft)** who spoke about 'Enabling Education Innovation with Technology: a Transformation Framework'. Such a framework is needed because children are confronted with technology much earlier than adults and have much higher device access. Children also use tools to do homework but at the same time, rates of technology use in European classrooms are still extremely low. This is partly the result of infrastructure issues. There is a need for e-confident teachers to use technology in a way that facilitates learning. It is challenging for schools to teach technology use according to needs. Four key areas for effective deployment of technology (the 'transformation framework') are needed: (1) vision, (2) leadership, (3) 21st century pedagogy and (4) technology. Technology decisions should only be made once a clear educational vision and strategy are in place, to ensure that technologies are selected on the basis of sound pedagogical principles. Implementing an effective digital education programme is a long term commitment, requiring 3-5 years to evolve into a transformative, personalized learning environment.

18.   The second speaker **Øystein Johannessen (Norway)** presented results from the Horizon Report Europe on schools, higher education and museums. One of the challenges that have emerged from the report is the integration of ICT into teacher and student training. If technology were to be included in the curriculum, then change would not only impact the curriculum, but also the assessment and the capacity of teachers and school leaders. Several key lessons have also emerged from the report, such as the importance of involving other research disciplines, like brain research and the research of learning environments. Technology's use for literacy should be expanded to other areas than technological literacy. In addition, a solid knowledge based on both research and empirical evidence is important. There was also the question of making evidence related to technology and learning available in a teacher-friendly format. A transition from computer based testing to an embedded assessment paradigm that uses data produced during the learning process to give feedback is necessary.

19.   The discussant **Mariana Patru (UNESCO)** highlighted that, unfortunately, not all UNESCO Member States have the possibilities to harness the full potential of digital technologies, particularly the ones mentioned in the session. Access to technology is still a big challenge for many developing and least developed countries. Yet the digital revolution should bring equal opportunities to all learners. In addition, it should start from the needs of learners and countries and be embedded in a coherent vision, constructed from the bottom-up. Teachers should be a part of this vision, they will not do something just because they are told to - they should be empowered as creative thinkers, encouraged and motivated to embrace technology in innovative ways.

3.d 21ˢᵗ Century Pedagogies: Making Change Happen

20.   The session examined the importance of the teaching and learning interface, which is largely invisible to all except the immediate participants and lack of visibility contributes to more acute governance and reform challenges. The first speaker, **Anne Sliwka (University of Heidelberg, Germany)** discussed what constitutes a state of the art learning environment and implications for teacher education. Drawing on the OECD/ILE principles, such a learning environment recognises learners as its core participants, engages them actively and develops in them an understanding of their own activity as learners. It actively encourages well organised co-operative learning and employs learning professionals highly attuned to the learning motivations and the key role of emotions in achievement. Learning environments are sensitive to individual differences among learners, devise programmes that demand hard work and challenge all without an excessive workload. They promote a horizontal connectedness across areas of knowledge and subjects as well as to the community of the wider world. Another part of the presentation highlighted that teacher training settings (in initial teacher education, induction and in-service-training) need to reflect what was embodied in the following principles: a diagnostic assessment, such as the differentiation/personalisation of learning and scaffolding; the focus on cognitive, meta-cognitive and social emotional learning; the consistent use of ICT in learning environments, transparent assessment criteria and formative assessment; and a deliberate selection of learning methods that make connections to various community agencies to support learning. The concept of 'self-similarity' indicated that all levels of the education system need to apply these principles in order to create coherence and sustainability.

21.   The second speaker **Zemira Mevarech (Bar-Llan University, Israel)** focused on what types of problems are useful for innovation-driven societies, based on a newly published OECD book on Critical Maths for Innovative Societies of which she is co-author. There are different methods for teaching mathematical skills. More innovative methods involve investigation, problem-solving skills, creativity, critical thinking, communication - the meta cognitive skills which allow thinking about thinking skills. The findings of the research indicated that students exposed to the innovative teaching methods showed higher scientific literacy, motivation and self-efficacy than those in the control group. Challenges remain since the students involved in the study found it difficult to apply meta-cognitive questioning in ICT environments. Hence it is important to include meta-cognition directly in curricula.

22.   The discussant **John Bangs (TUAC)** focused on three main points. The first one concerned the use of schools by students – even lunch breaks are important to engage in social interactions with other students. The second point was that a theory of learning for teacher learning needs to be articulated. Investments in professional development of teachers that would bring identifiable outcomes are necessary. Third, collaborative learning among teachers is crucial. For instance, in the United Kingdom, there are different routes into teaching (e.g. traditional, Teach First and school-based teacher programmes). Some of these routes, such as Teach First, have very good networks and are able to link alumni in teaching communities.

3.e Drawing the Threads Together

23.   This session provided short summaries of the transversal themes presented by four speakers (**Philippa Cordingley, Dahle Suggett, Øystein Johannessen** and **John Bangs**). The main messages were that education systems are complex and the authority of decisions is devolved and decentralised based on the assumption that better decisions could be made at lower levels. But it is difficult to get the balance right. Policies need to embrace an element of complexity, but probing and experimenting in such systems is demanding in the administrative sense. So it is difficult to propose answers to questions on strategic planning, accountability and the regulatory environment.

24.   Another theme that emerged in the transversal session was knowledge which is at the centre of creation, generation and diffusion of knowledge. It is important to determine what knowledge is required and what the profession contributes to knowledge individually and collectively. Most assessments of teachers are based on their own practices, but the majority of teachers work collaboratively. Nonetheless, assessments are mostly done at the individual level. A third theme from the transversal sessions was technology that can re-engineer how things are done. Two change-makers are especially powerful: the agency of young and the power of technology.

25.   The fourth theme was professionalism and pedagogy. The social nature of learning is about optimism, the nature of institutions and connections with the wider community. It is important to involve students and their voice, and offer a systematic self-evaluation at the institutional level. It is difficult to create systematic approaches to teacher policy when ministers want simple answers to problems. A genuine discourse between teachers, unions and the government needs to be triggered and structured. This could be done through the work within the OECD, research commissioned by government organisations, and common platforms of discourse about the creation of teacher policy.

26.   Then three practitioners from Norway (**Lin Marie Holvik**), New Zealand (**Jill Farquharson**) and British Columbia (**Lynne Tomlinson)** offered their insights on the transversal themes. They stressed the need to have a vision for education systems, as well as leaders who are able to build circular pedagogical innovative environments. The role of trust between all stakeholders is important, especially in students and teachers. In addition, student agency is crucial in monitoring the students' own progress, using technology and being involved in innovative changes. Giving ownership to teachers is also vital, for instance by involving them in curriculum development. Overall, it is important to strike the right balance between autonomy and accountability between the government and other stakeholders including districts, networks, school leaders, teachers and unions. This could facilitate the creation of an ecosystem of learning.

4. Keynote Address

27.   Lord **David Puttnam** started his keynote with his own story – he left school at 16 because he felt let down by the system, but then took night classes and realised that he loved learning. His talk covered a number of topics related to education, such as the increasing uncertainty in the future, the necessity of stability, and the skills mismatch between education and employment. The main lessons were the following: (1) it is important to get education right; (2) no education system can be better than the quality of the teachers and the standards in place; (3) teacher training needs to be non-negotiable and continuous; (4) a global acceptance of the importance of education of women is key as it could build better-educated families. In addition, a minimum of 7 per cent of total GDP should be spent towards education since education spending needs to take priority and education should be considered an investment, not a cost. Only a world class education system can insure a world class health system, social security system, and public services system – education is connected with everything else.

5. Insights from Individual CERI Projects

5.a Innovation Strategy for Education and Training (IS)

28.   The IS project's session focused on 'Fostering an innovation eco-system'. The first speaker, **Leonardo Tosi (Indire Institute, Italy)** explained the Italian 'national digital plan for schools', which was run by the government from 2007-2012 with the goal of introducing ICT as a daily tool in school environments where most teachers had never used a whiteboard and most schools had an internet connection but only 7 per cent used it in their classroom. The government provided funding for equipment and training programmes and printed guidelines (training was conducted by Indire for almost 100,000 teachers)**.** The capacity of the system was built and a 'contagion' effect started with teachers demanding ICT. However, innovation was mainly left to the single teacher and the overall goal of breaking the classroom 'incapsulation' had not fully been reached. The Indire initiative then took a bottom-up approach as complementary to the government strategy, working with pilot schools with the aim of creating networks of innovation that could act as an example to other schools. In conclusion, it emerged that (1) formal training does not necessarily enhance innovation; (2) results of national innovation policy are not always predictable; (3) innovation support strategies help only if there is already a certain level of e-maturity and (4) moreover voluntary demand from teachers and school leaders allowed schools to innovate the most.

29.   **James Richardson (Education Endowment Foundation, UK)** then talked about the Education Endowment Foundation, which was established in 2011 by the UK government with the goal of breaking the link between family income and school attainment. It follows a 4-tier approach: (1) analysis of the existing evidence base (meta-analysis of related 8000 studies) and provision of a toolkit which is heavily used by UK principals, (2) grant-making to universities, charities, and groups of schools to run trials on the most promising interventions, (3) an independent research team evaluating the impact of the project, and (4) sharing and promotion of evidence. In total, 93 projects have been funded, involving 630,000 students, and one in six schools has been involved in trials (intervention or control). It was not intended to be a top-down model, but schools are seen as partners and often lead research and interventions. Many projects have been evaluated by schools coming with a project they had heard of and that they wanted to trial (such as the impact of playing chess, summer schools, and use of tablet technology). Nonetheless, it is still unclear how to communicate evidence effectively – research diffusion is not enough. EEF has carried out five projects to research this and to find out which social environment is the most conducive to the take-up of evidence.

30.   The third speaker, **David Jasmin (la main à la pâte, France)** focused on the question of how to reintegrate science into primary schools – a subject that speaks to the natural curiosity of children, offers a link to the real world and helps them learn transversal skills. In la main à la pâte's strategy, the teacher proposes innovative resources for his/her class, as well as capacity building schemes, but the content is entirely student driven – shaped by student observations, questions and initiatives. The project began with pilot experiments involving around 350 classes in 1995, followed by 5000 classes in 2000 when the ministry also launched a plan for the teaching of science, a new national curriculum in 2002, and finally the creation of the foundation (www.fondation-lamap.org) in 2012, which today publishes and diffuses teaching material and proposes a large range of professional development activities for teachers and educators. However, several obstacles to scaling-up exist: there is no long term vision because of fluctuating ministerial priorities, funding has been reduced, teachers are not obligated to participate in this capacity building and there is still no societal pressure on primary schools to innovate and teach science.

5.b Innovative Teaching for Effective Learning (ITEL)

31.   This session on 'Changing classrooms, changing teacher knowledge' introduced four speakers: **Philippa Cordingley (CREE, UK)**, **Alenoush Saroyan (McGill University, Canada)**, **Kristen Pantin (Microsoft)** and **Dianne Turner (British Columbia)** who engaged with questions about changing teacher knowledge and its requirements. The main messages from this session are described below.

32.   First, the teaching profession should take a leadership role in driving pedagogical innovation and reform. There is a need for new pedagogies with a focus on 21st century skills. But change for the sake of change is not useful - we need to understand its value and relevance. Teachers' knowledge needs to be mobilised to make a difference for the staff and students. Exceptional schools have an explicit model of pedagogy that is relevant to students' lives. Such schools remind us to be uncompromised about raising the floor and of raising the ceiling: setting explicit, high expectations for teachers' continuing development learning and its link with professional knowledge base.

33.   Second, the teaching profession should be a key stakeholder in the ownership and governance of its knowledge base. Teachers need to be engaged in knowledge creation. However, creating knowledge is not the same thing as using knowledge and putting it into practice for the benefit of students. Some evidence shows that teachers' continuing development learning is critical to the quality of their teaching and the learning outcomes of their students. It is also vital to provide opportunities for teachers to feel optimistic about their work. In addition, building an environment of trust is indispensable. Failure is allowed and sometimes even necessary, however, not learning from it is not permitted.

34.   Third, the social learning of the profession is crucial, especially for teacher motivation, and calls for knowledge sharing and the implementation of peer learning and assessment strategies. Creating a collaborative, co-operative, safe and trusting learning environment is very useful for engaging teachers in learning opportunities. Successful experiences (such as the Delta School District, British Columbia, Canada) engage teachers in professional learning by promoting collaborative inquiry and support. Teachers share best practices and learning across classrooms, schools in the district, schools in the province and beyond. Any successful endeavour, therefore, requires a partnership between schools, students, administrators, parents and governments, who should all use similar language and work towards the same goal.

35.   Fourth, the changing demands of the teaching profession mean that teachers need to adapt and improve what they know and what they do – otherwise children will look for knowledge elsewhere. Adaptation is necessary to prevent the extinction of the teaching profession.

5.c Innovative Learning Environments (ILE)

36.   The ILE session discussed 'Growing and sustaining innovative learning environments'. Five laboratories of change have been actively working on the project (**French Belgium, New Zealand, British Colombia (Canada), Peru and KwaZulu Natal (South Africa)**), which focuses on how to maintain growth of innovation. Numerous strategies have been analysed and tools have been created with the aim to engage stakeholders more in the implementation process of the school networks and to evaluate and to share what has been learnt collectively. This project has been an innovative way of working at the OECD. In this session, each of the participating laboratories began by briefly describing their respective strategies. British Columbia explained the goal of its work as making curiosity a way of life through networks and leadership development, while New Zealand's work is about learning and changing network strategies and engaging the parents of students. South Africa's project focuses on how the government can provide an enabling environment for the whole school community to share experiences and work with others. French Belgium's strategy, Décollage, has created networks between and within schools and has sought to create

alternative practices in schools. The Peruvian Innova Schools network is about private sector innovative learning environments aimed at the modest middle class providing opportunities otherwise not available. The five projects then addressed diverse questions, ranging from what the essence of ILE is, to whether powerful ideas of learning can be resisted, to whether there are tensions with the ministry, including around funding.

5.d Governing Complex Education Systems (GCES)

37.   The GCES session focused on 'Modern governance challenges'. After a brief introduction of the projects' approaches and work regarding governing complex education systems by **Tracey Burns (OECD)**, the invited speakers from Chile and Poland and the discussant from Norway each introduced an example from their respective country touching upon the issues covered by the project.

38.   **Francisco Meneses Ponzini (Chile)** described the marketization of the Chilean education system from 1982, which is currently being reformed due to concerns about effects on equity and quality. The following points were highlighted: (1) Instead of increasing efforts in teaching, schools focused on pre-selecting high ability students and expelling underperforming students; (2) Even though parents were provided with large amounts of information about schools' performance, most of them chose the school based on proximity; (3) The school system was overburdened by a highly hierarchical accountability system. Furthermore, multiple state agencies focused on detailed and easily measurable metrics, and lacked the capacity to pay attention to the broader picture. The government is now exploring different approaches to improving the schooling system.

39.   **Jerzy Wisniewski (Poland)** presented two reforms. The first example pertained to a reform in the late 1990s that embraced the whole system of school education (the structure, curriculum, examination, governance). It was very successful as it took advantage of a window of opportunity (namely widespread desire for change and municipal elections with new incumbents showing enthusiasm for reform) and a number of strong actors in the education system (such as school principals). The wide-ranging reform was rolled out in about 18 months and although stakeholders were not extensively involved, the reform was not met with opposition. This was potentially due to the speed at which the reform was carried out. Achievements of Polish students in consecutive PISA waves have proven the success of the reform. However some policy-makers unfortunately exhibited oversensitivity to stakeholder pressure and public opinion and failed to follow through with the implementation of the reform. The second example, in contrast, illustrated a reform concentrated only on the programme (curriculum) reform shifting the focus to key competences and learning outcomes.

40.   The discussant **Annemarie Bechmann Hansen (Norway)** provided an example from the Norwegian education system, which also touched upon the issue of time in education reform. In a climate of urgency to reform the education system, there is often little patience to wait for a reform to actually take effect. The Norwegian example described a reform to devolve education responsibilities to the local level. After a short period, frustration with the reform was voiced, as the central level did not guide the local level in the implementation. In its response, the central level developed guidelines to aid the local level. However, as these guidelines were ready to be implemented only shortly after the local level had already managed to develop its own approaches to the implementation of the reform and accommodate their new responsibilities. The central level's assistance was thus not perceived as help but rather as central over-steering. Two lessons were learned from this reform: it was important to (1) be confident in capabilities (of local actors) and allow enough time to adapt to reforms, and (2) have a thorough dialogue ensuring that a common definition of the expectations is reached.

6. Shaping the Future of Education

6.a Major Trends

41.   This session looked at some major trends affecting the future of education and setting challenges for policy-makers and education providers. **Angela Wilkinson (OECD)**, pointed out that 80 per cent of failed strategies are a result of misleading prejudgements i.e. assumptions about the future that were not properly revealed or tested. She reported that the OECD is currently upgrading its strategic foresight capabilities and explained different methods that are and can be used for looking at the future. For instance, the forecasting method projects the present path dependency i.e. business-as-usual, into the future. In contrast, visioning and scenario-based foresight works from the future back to the present. Visioning focuses on the normative future, whereas as a set of scenarios reflects plausible, alternative futures that might happen whether or not we want them to. As such, scenarios are powerful reframing tools – they enable us to look back at the present from the different perspectives offered by alternative futures. This enables engagement with intuitive and creative thinking as well as critical thinking. Scenarios expose and test assumptions that might otherwise remain implicit and incontestable and contribute to developing new and shared understanding of connected challenges that present as socially messy and puzzling situations rather than simple problems. Foresight methods also provide a way to engage with radical uncertainty and overcome model uncertainty – i.e. when policy makers do not know which model to use to calculate the impact of reform policies. This is important to avoid policy makers defaulting to ideas, solutions and models that have worked in the past, but are not guaranteed to work in future. Foresight in policy also provides a means to shape the future, rather than trying to predict the next crisis. Foresight offers governments a way to avoid missed opportunities by exploring what might happen – not only what will or should. Foresight also places new responsibilities of leadership – to be more self-reflective about the stories leaders tell about the future and redirected attention to what is not less familiar and uncomfortable that known and knowable by asking better questions and promoting policy as a social learning process for prototyping and scaling safe-fail solutions rather than designing grand strategies that, in effect, assume control of the future.

42.   The speaker of this session, **Tracey Burns (OECD),** focused on the trends shaping education and presented some findings from the 2013 publication in order to stimulate reflection on and ask questions about the future of education. She explained how many trends outside of education have the potential to shape education, such as globalisation, climate change and the work force, however we do not always take the time to consider them as we focus on our day to day work. She then presented a quiz, focusing on different trends ranging from country share of immigrants, average daily intake of calories, voting rates, the ageing population, the rise of facebook, and online bullying, and explored what they could mean for education. Several potential questions evolved from the data such as whether teachers are equipped to incorporate the kind of local diversity that results from greater immigration; what role education should play in meeting the needs of older members of the population or whether education nurtures the creativity necessary to be innovative.

Figure 2: Some trends shaping education
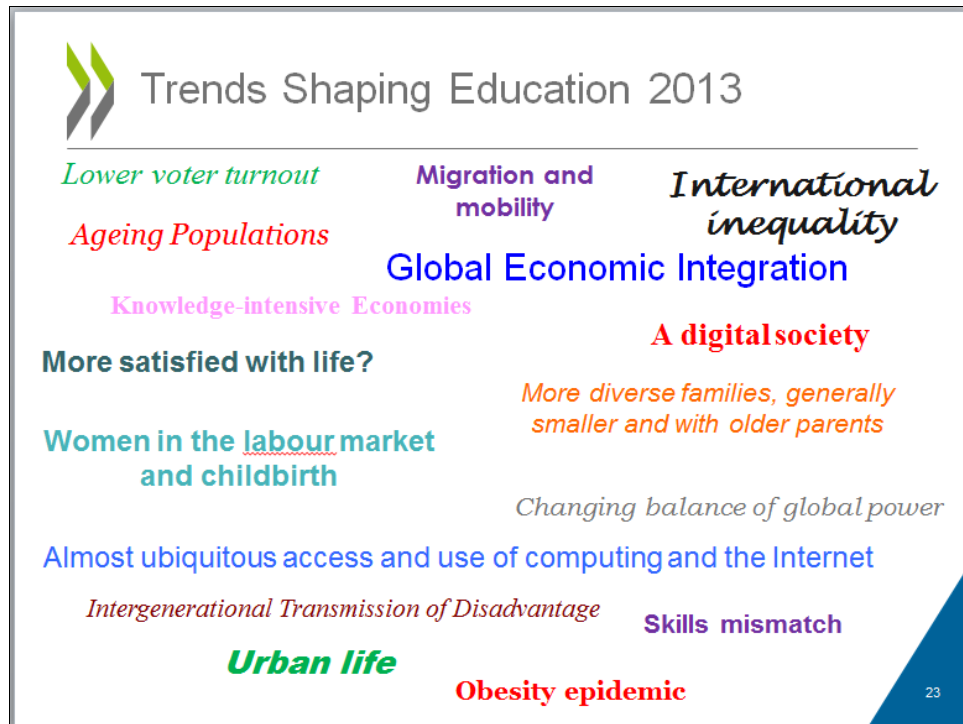
Source: Tracey Burns.

6.b The Role of 'Big Data'

43.   The session examined the opportunities and challenges of big data for education and how it could transform pedagogic and governance practices and stimulate innovation in the education sector. The first speaker, **Christian Reimsbach-Kounatze (OECD)**, discussed data-driven innovation (DDI) for education. There is a wealth of data routinely generated and collected in the education sector. But the data should not be about data itself, instead the novelty is about the enhanced capacity to analyse data with greater precision and rapidity. DDI refers to leveraging the enhanced capacity to use data and analytics to foster different forms of innovation such as product and process. There are several benefits and challenges around DDI. For instance, DDI enables better insights of complex trends, the use of data for the customisation of services, and the opportunity for automation. Among different challenges, Mr. Reimsbach-Kounatze highlighted privacy issues, data breaches, discrimination and filter bubbles, as well as a lack of data scientists. In addition, he pointed out data governance issues in terms of ownership of data generated in new ways and data interoperability between different data systems. There is a need for better data sharing platforms.

44.   **Mart Laidmets (Estonia)** followed with a presentation on the Estonian Education Information System. This system was developed as part of a broader e-government programme. It allows students and educators to access their own personal data. In addition, it has increased the decision-making capacity of education stakeholders, for instance, for monitoring and evaluation as well as the allocation of financial services. There are several future plans for developing this system, such as improving indicators to assess school effectiveness, improve visualisation and make connections with labour market outcomes of university graduates.

45.   Overall, the session highlighted many opportunities around big data in education but also great challenges. Data-use practices at the school and classroom levels are still lagging far behind the technological/analytical capacity. Opposing privacy to innovation could be a flawed debate – instead, safeguarding privacy could be seen as a way of creating trust. There is great potential for adaptive learning and for providing great comparisons for teachers. Therefore, it is important to enhance new governance mechanisms around the use of data.

6.c Future Learning Systems

46.   This session explored learning systems and future approaches from a variety of different perspectives. It was led by **Valerie Hannon, David Istance, Tony Mackay, Riel Miller, and Michael Stevenson**. CERI's work on future learning systems has made an impact as the six scenarios identified 15 years ago are still being used today. Futures thinking can work best when an integral part of innovation policy, leadership development and knowledge management. Two systemic conclusions can be underlined. First, in order to realise the seven principles of learning, which are the foundations of ILE, schools must act as centres of learning in eco-systems. Second, to move from discrete and exceptional environments to eco-systems, system thinking is necessary and understanding of how systems work. School leaders need to establish profound relationships with other inhabitants in civil society as eco-systems are extensive and embrace economy, society and education.

47.   Two important missions could be met: (1) developing young talent from school to employment, and (2) searching for solutions to the great problems of our time. The mechanisms to bring these two transversal processes together could be new pedagogies. There needs to be integrated complex learning communities in which all the players take part and which may be local (city or region), national and international in setting. Universities are located in the middle of the ecosystem and have a fundamental role to play. It is necessary to address what is adequate governance for a diverse and interdependent eco-system, and what it means for professionalism and professional progression. The OECD could shine light on these developments and issues.

7. Main Messages and Conclusions

48.   Drawing out some key messages from the conference, **Lucie Cerna (OECD)** remarked that it is crucial to ask questions, such as what is needed for improving innovation in education, where we want to go and how we can get there. Several important elements are necessary to implement change and innovation in education systems, like having a clear vision as well as a common understanding and language, allowing teachers and students to have agency over innovations, encouraging collaboration and networks, and building and sustaining trust. Likewise, it is vital to maintain a balance between patience and quick results in a political context where timing matters. Risk-taking should be encouraged as well as learning from failures. Evaluation needs to be part of every process. Additionally, the use of data has lots of potential but also challenges – for instance, technology could facilitate collecting and analysing data even though it should only be a tool and not a means to an end. As a result, capacity building needs to be developed at all levels of governance. In sum, getting the balance right between risk-taking, trust and innovation is essential.

49.   **David Istance (OECD)** noted that although horizontal work was not always easy, the conference had been a stimulating and valuable event. With four contributing projects, the conference had sought to build connections, synthesize and see the bigger picture. The conference had helped to connect the themes of innovation, governance, and reform. He hoped that the process of making connections would be continued, and that the ambition of a transversal CERI conference would also be continued.

50.	In his concluding remarks, **Dirk Van Damme (OECD)** observed that we are at the crossroad of a paradigm shift and therefore in a period of confusion. Education should be the driver of change, not the recipient. It should pave the way for the construction of a better life and a system of values and ethics through which people can live together. It is important to have pedagogical optimism in education – a sector inherently about change, and thus having a considerable advantage over other social systems. There is a trade-off to innovation – innovation and change are complex, and complexity can lead to immobility. So students should be enabled to learn from their mistakes and take risks. Additionally, teacher professionalism is crucial but it has to empower other stakeholders including parents and students. Instead of comparing teachers to medical doctors (an analogy used throughout the conference), it is preferable to compare them to architects, for architecture is a discipline of hope and pragmatism, that enables rather than cures. The next step is to move to the power of design in education in order to challenge pedagogical gravity and find creative and effective ways of engaging children in schools. For this, the integration of technology is indispensable.

Figure 3: From the utopian to the practical mind
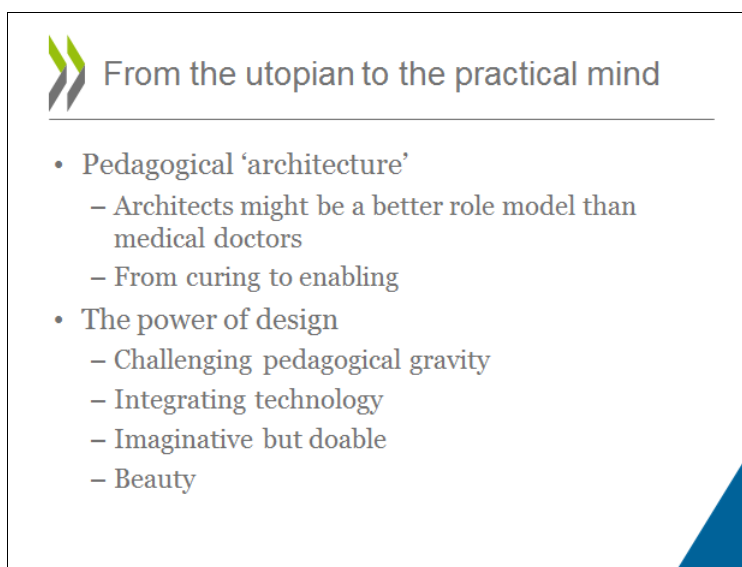
Source: Dirk Van Damme.

51.	The Secretariat has made available the presentations and the webcast of the first two sessions of 3 November 2014 on the conference website at http://www.oecd.org/edu/ceri/ceri-conference-2014.htm.