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INNOVATION, GOVERNANCE AND REFORM IN EDUCATION

CERI Conference Background Paper

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This paper provides the main background documentation for the Conference “Innovation, Governance, and Reform in Education”, being held from 3-5 November 2014 at OECD headquarters in Paris. It draws on a wide range of recent OECD analysis, especially produced within CERI by the different projects that are contributing to the conference.

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INTRODUCTION

1. It is a popular idea that education is a sector not prone to innovation and change. In the recent past many education policy makers have complained about the ‘conservatism’ of the system and the ‘resistance to change’ of its professionals, the teachers. Employers grumble about schools not producing employable workers with the right sets of skills. And, many parents conflate educational excellence with pedagogical traditionalism. As a result, education is perceived as losing the race with technology, unable to keep up with the soaring skills demand of 21st-century economies and the many social changes contemporary globalised societies bring about.

2. But, is this perception accurate? Recent work at the OECD Centre for Educational Research and Innovation (CERI) demonstrates that education systems are much more complex. Attempts to measure innovation in education show that education is as innovative as many other public policy sectors. Many innovations are happening at the frontline of the system, in schools and classrooms, with pioneering teachers and inventive school leaders creating innovative learning environments. In some cases, education policies help create favourable conditions for innovation and improvement, but also many examples can be found where policies have engendered conformity to top-down regulation and compliance to the status-quo, rather than created spaces to experiment and instilled the trust and courage needed to think outside the box.

3. As a whole education systems often uphold historical traditions, organisational cultures, professional models and accountability arrangements which favour obedience and discourage risk-taking. So, the question on innovation in education turns into a question of the governance of reform. How can the conditions be created to foster innovation? What kind of accountability mechanisms would foster innovation, encourage risk-taking and create a culture of trust? What kind of policy interventions can shape the organisational cultures in which trust can flourish, so that innovators can take the risks to step outside the conventional wisdom? How can the teaching profession be a driver of educational innovation? What kind of leadership do education policy makers need to develop in order to create a culture of innovation?

4. In order to answer these questions, we need to better understand the complexities of contemporary education systems. Too often linear, top-down policies intended to bring about change have resulted in unwanted consequences because of a poor understanding of the multi-layered and multi-dimensional nature of education systems. In increasingly complex education systems many different levers have to work together to create open and innovation-friendly environments.

5. In this conference, different strands of CERI analyses and key findings from other parts of the Organisation on innovation, governance and reform will be brought together. In preparation for the conference, this paper highlights existing CERI work and draws linkages between the themes of the CERI projects in a more systematic way. It explores some new concepts such as complexity, horizontal accountability, trust, professionalism and leadership in order to facilitate discussion during the conference.

INNOVATION, GOVERNANCE AND REFORM

6. Even as far back as the beginning of the 20th century, Dewey (1916) wrote that the school was the most conservative institution in the United States and was being used to impede the correct attainment of the democratic ideal. Despite this, he stated that schools had the potential to become the most radical of all institutions and could be drivers of real change. The main goal of progressive education, in his view, was to turn the school into an instrument of social reform.

7. Although knowledge should be the starting point for reform, education has a relatively weak knowledge base when compared with other service delivery organisations. Policy makers and practitioners are too often unaware of the research base that might support their actions and in many systems there is no established way of incorporating new knowledge into institutional practices to improve professional practice and student learning outcomes. Education has relatively undifferentiated roles for actors within the system, few requirements to incorporate good practices for managing school organisations and classroom activities, and the initiation of new members into practice is rarely systematic, all of which contribute to conservatism in education (OECD, 2008a: 139). The tension between radicalism and conservatism thus runs through any discussion of innovation, governance and reform.

8. There is a strong link between reform, governance and innovation. Reform is about policies that set the ground rules and frameworks, and help to establish priorities and conditions. Governance refers to organised decision-making relations in the service of aims and good functioning. Last, innovation is the increasingly important renewal that takes place within these parameters, given the demanding, rapid-changing nature of learning systems. The next sections further analyse the interconnections between these three parts.

Innovation

9. Innovation can be defined as any kind of dynamic change that is intended to add value to the educational processes - this can apply to different levels, ranging from systemic to classroom innovation. More precisely, the Oslo Manual¹ (2005) defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations” (OECD and Eurostat, 2005: 46).

10. Though the terms are often used interchangeably, it is important to define how innovation is distinct from reform and change. Most of the literature defines innovation as the implementation not only of new ideas, knowledge and practices but also of improved ideas, knowledge and practices (Kostoff, 2003; Mitchell, 2003). Innovation is thus different from reform or change, as the latter terms do not necessarily mean the application of something new, nor do they imply the application of improved ideas or knowledge (King and Anderson, 2002). However, in practice it is difficult to know whether something is an improvement over an existing situation (Kools, unpublished).

11. Melchor (2008) suggests that reform is only one way of producing change; it implies a special approach to problem solving. Sometimes changes in organisations are key parts of reform but other reforms produce little or no change at all. Whereas change as transformation or alteration may be an

¹ The Manual is the main international source of guidelines for the collection and use of data on innovation activities in industry.

intended or unintended phenomenon, reform is a structured and conscious process of producing change no matter its extent. Reforms can occur in political, economic, social and administrative domains and contain ideas about problems and solutions and are typically understood as initiatives driven from the top of a system or organisation (Kools, unpublished). The following table provides a comparison of the three terms.

Table 1. Innovation, reform and change in comparison

	Innovation	Reform	Change
Definition	Implementation of improved ideas, knowledge and practices	Structured and conscious process of producing change	Transformation or alteration that may be an intended or unintended phenomenon
Key characteristics	Implies novelty and brings benefits	Produces change (though in some cases only little or none)	Is historical, contextual and processual
Types	Process, product, marketing and organisational Also: incremental, radical and systemic form	Radical, incremental or systemic	Differentiated by pace (continuous or episodic) and scope (convergent or radical)

Source: Compiled from Butler, 2003; Kools, unpublished; Kostoff, 2003; Melchor, 2008; Mitchell, 2003; OECD, 2009; OECD and Eurostat, 2005.

12. Overall, innovation is the main driver of progress in all aspects of human and economic activity. It is a common thread at the OECD, not only through its *Innovation Strategy* (OECD, 2010c), but also across different directorates and projects. There has been a drive for innovation in a number of public sectors. Demographic pressures, social and economic pressures to raise achievement levels and ensure greater equity of outcomes, rapidly advancing technologies, growing demand for government services, higher public expectations and tighter fiscal constraints have created a need for innovative solutions in the public sector to enhance productivity, contain costs and boost public satisfaction (OECD, 2014c; Looney, 2009). An increasing economic and social imperative exists for education systems to innovate and produce innovative people.

13. There are several key reasons why innovation matters for education (according to the OECD, 2014c):

- Educational innovations can *improve learning outcomes* and the quality of education provision. For example, changes in the educational system or in pedagogies can help customise the educational process. New trends in personalised learning rely heavily on new school organisations and the use of information and communication technology (ICT).

- Education is perceived in most countries as a means to *enhance equity and equality* of learning outcomes and learning opportunities, and the Programme for International Student Assessment (PISA) results provide evidence for this (OECD, 2012c; 2013f). A recent OECD project investigating the measurement of innovation in education indicates that education systems which have innovated the most have also been the most equitable and equal in terms of learning outcomes and opportunities.
- Public organisations are often under as much pressure as businesses to *improve efficiency*, minimise costs and maximise value for money. Mulgan and Albury (2003) argue that there has been a tendency for costs in all public services to rise faster than those in the rest of the economy, and education is no exception. While this could be attributed to Baumol's (1967) cost disease, i.e. to the nature of the public service provision which faces rising labour costs and limited scope for transformative productivity gains, this may also be due to a lack of innovation (e.g. Foray and Raffo, 2012). Innovation is regarded as a stimulus for a more efficient provision of these services.
- Education should remain relevant in the face of rapid changes to society and the national economy (Barrett, 1998: 288; Lauder et al, 2006). The education sector should thus *introduce the necessary changes* that permit it to adapt to societal needs. Education systems, for example, face a need to adopt teaching, learning or organisational practices that have been identified as beneficial to fostering 'skills for innovation' (Dumont et al., 2010; Schleicher, 2012; Winner et al., 2013). The results of the Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS) and the OECD Survey on Adult Skills (PIAAC) point to the need for innovation to improve results in literacy, numeracy or scientific literacy in many countries (OECD, 2014b).

14. Despite the benefits of innovation, innovation is not always a systemic feature of education because there are several interrelated barriers (OECD 2009a; 2013a). First, there is the inherent conservatism found within organisations and in the wider community influencing that organisation summed up as 'preference for the status quo'. Conformity to rules and regulations overrides other forms of behaviour that might seem risky and disruptive of established practice. The second barrier is that structures and organisational cultures for innovation might be inappropriate. Third, results of innovations are uncertain, which increases the difficulty of winning support for innovation and brings in complex issues from multiple sectors and numerous additional stakeholders with their own agendas and timelines.

15. Policies to improve learning innovation will need to address these barriers and promote such innovation positively. Their causes lie partly in institutional practices, but often are more systemic as with the performance and accountability frameworks (OECD, 2009a).

Measuring innovation

16. Despite the highlighted challenges in the preceding sections, is it in fact true that the education sector is not prone to innovation and reform? One recent project at the OECD Centre for Educational Research and Innovation (CERI) set out to measure innovation in education. It highlights that innovation intensity is greater in higher education, with secondary and primary education approximately equal. Compared to other sectors, knowledge and method innovation² is above average in education; product and

² REFLEX (2005) and HEGESCO (2008) surveys asked higher education graduates five years after their graduation "How would you characterise the extent of innovation in your organisation or your work?" regarding "product or service", "technology, tools or instruments" and "knowledge or methods" innovation.

service innovation is below average, while technology innovation is at the average sectorial level (OECD, 2014c).

Box 1. Measuring Innovation in Education

Policies supporting innovation in the private and public sectors need relevant and reliable indicators that help monitor the innovation process, and evaluate the success of innovation policies. Moreover, comparable international data and benchmarking facilitate international policy learning. A measurement agenda is essential to an innovation and improvement strategy in education.

Recent measurement initiatives can be grouped into two broad approaches: (1) the adaptation of the innovation surveys to the public sector (including education), and (2) the analysis of organisational changes through employer-employee surveys. *Measuring Innovation in Education* provides education policy makers with an estimated order of magnitude of innovation and change in education, but also shows the types of information that targeted data collections based on these approaches could generate.

Measuring Innovation in Education captures innovation as a significant change in some key practices in educational establishments by drawing on the PISA, TIMSS and PIRLS databases. The proposed indicators are “object-based”; they do not only give a level of innovation by country, but also identify what these innovations or practices are. The report’s indicators include information about which practices have changed and which have remained constant. They also report on the direction of the observed changes. The focus of the practices lies on school and classroom change (or innovation).

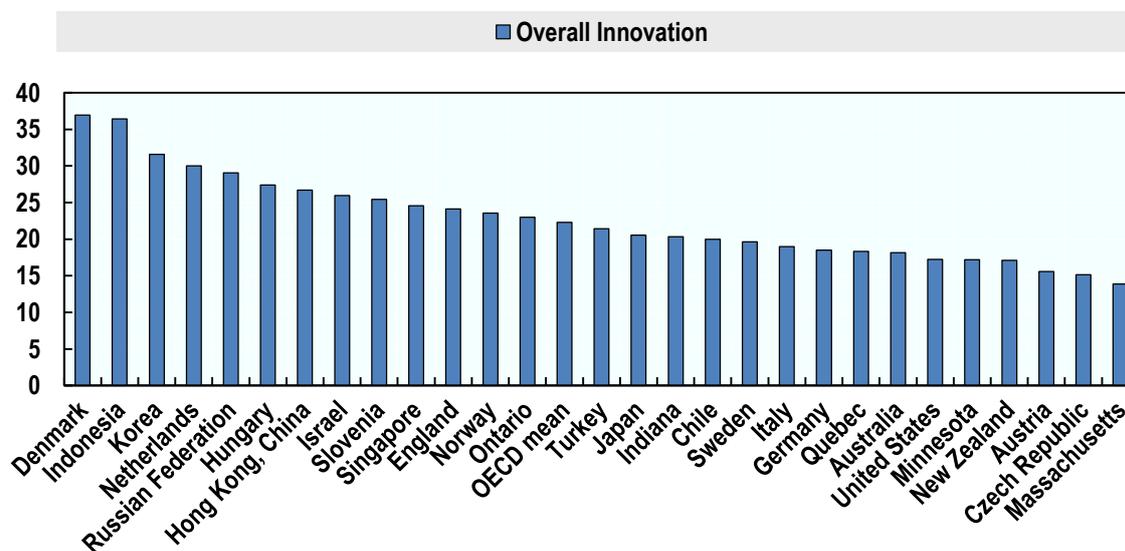
The variety of indicators that can be included in the “organisational change” approach provides more information and detail about ongoing innovations than the “innovation survey” approach. In addition, it allows for accommodating an “expert” view of educational innovation. A composite “innovation index” synthesises the information captured throughout the “organisational change” part of the *Measuring Innovation in Education*.

Source: OECD, 2014c.

17. Nonetheless, there are big variations across countries in the reported levels of innovation. The education sector has significantly higher levels of innovation than the public administration sector on all the used indicators and is at least as innovative as the health sector on each measure. On average, education thus has higher levels of innovation than the other public sectors for which information exists (OECD, 2014c).

18. Overall, innovation has been higher with regards to classroom practices than school practices between 2000 and 2011 (see Figure 1). Taking all practices together in an overall composite innovation index, countries in which there has been the most innovation at the classroom and school levels in primary and secondary education include Denmark (37 points), Indonesia (36 points), Korea (32 points) and the Netherlands (30 points). Countries where there has been the least innovation include the Czech Republic (15 points), Austria (16 points), New Zealand and the United States (both 17 points) (OECD, 2014c).

Figure 1. Overall composite indices for period 2000-2011



Source: OECD, 2014c.

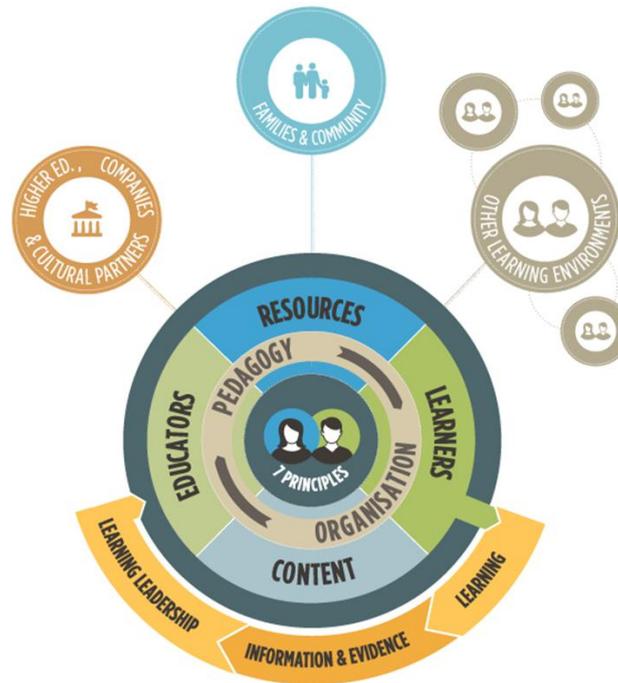
19. While it is important to further monitor innovation intensity over time, it is also crucial to continue to refine our understanding of innovation processes. This is what the Innovative Learning Environments (ILE) project at OECD/CERI has done, and is highlighted in the following section.

Innovative learning environments

20. Overall, many innovations are happening at the frontline of the system, in schools and classrooms, led by pioneering teachers and inventive school leaders creating innovative learning environments. A *learning environment* can be understood as an organic, holistic concept that embraces both the learning taking place and the setting in which it occurs: an eco-system of learning that includes the activity and outcomes of the learning. It recognises that context is essential in the contemporary understanding of learning (De Corte, 2010; see also OECD, 2013a). An innovative learning environment has four dimensions for enhancing student learning: the student as a learner, the teacher as a learning professional, resources and facilities for learning, and the content of learning such as developing 21st century competences (Dumont and Istance, 2010; OECD, 2013a).

21. Figure 2 demonstrates the ILE framework which comprises three components, layers or cycles: the “pedagogical core”, the “formative cycle” within the organisation (learning leadership and design, evaluation, feedback and redesign), and “partnerships” (ILE, 2013a: 186). The pedagogical core is composed of four elements: learners, educators, content and resources. The second part of the core is made up of relationships and dynamics that combine the elements together in particular ways. These can be grouped under ‘organisation’ and ‘pedagogies and assessment practices’. The basic core is extended in two ways. There is an agency in shaping the environment’s direction, which is influenced by the leadership and organisational strategy, the learning that takes place and how this is acted on by the learning environment as an organisation. In addition, the learning environment can have relations with families of the learners and communities; partnerships with businesses, cultural institutions and higher education; and other learning environments. The third component of the ILE definition of learning environments is thus the connections and partnerships which exemplify the diversity of sources and tightness of boundaries of learning environments (ILE, 2013a: 24-25).

Figure 2. ILE framework



Source: OECD, 2013a; 2013b.

22. There are numerous ways in which examples from schools and classrooms are considered innovative in their own context (OECD, 2013a). Sometimes it is about a fundamental difference in approach, practice and culture from the main body of educational provision in their system; sometimes it is innovation of a less fundamental kind. For example, *Europaschule Linz (Austria)* is innovative within the Austrian school system as its approach to learning is highly individualised. Sometimes the innovative nature of the learning environment is revealed by something distinctive that in itself may not be so important but which indicates something more fundamental: “We work here with an open doors system, which is something very unusual for high schools in Chile”, said the principal of the *Instituto Agrícola Pascual Baburizza (Chile)* (OECD, 2013a).

23. Innovation and value of what they are doing is not necessarily to be judged by practices that can be judged as “new” or unique, but rather by how the different practices and approaches are put together into the whole. This again underscores the value of the holistic approach that is fundamental to the focus on “learning environments”: For the stakeholders of *Lobdeburgschule (Thuringia, Germany)*, innovation in the design of learning is not necessarily the development of something entirely new. Rather, the orientation on specific learner’s abilities and the use of proven elements are combined to gain overall novel changes (OECD, 2013a).

24. While innovation depends considerably on the context, some basic approaches can be replicated in other contexts. In the case of British Columbia, although there are some unique features of the *Saturna Ecological Education Centre* programme, many parts are replicable including pedagogical approaches, using community mentorships, learning partnership across age ranges, sustainable living skills, community service projects, Independent Directed Studies and peer teaching.

25. Many of the practices taken singly may be found elsewhere, and indeed are found elsewhere. There is no pretence that particular practices are “silver bullets”. But the point of thinking about environments, as opposed to practices, is that it is the whole that counts and the ways in which particular arrangements and practices fit into that larger whole (OECD, 2013a: 27).

26. Although it remains true that innovation is often not a systemic feature of education, innovative practices occur with great frequency in a multitude of contexts within the sector and with proper governance structures and a deeper understanding of the complexity at play, innovation can perhaps be brought to scale to reshape 21st century education.

Reform

27. The nature of policymaking and implementation of reform is complex because of the variety of stakeholders involved, different time horizons and unpredictable results, among others. Different theories regarding governance and complexity try to explain why policy change or reform occurs or does not. Existing research indicates that reforms usually happen due to a combination of enabling factors, seated in shifts in stakeholders’ values and beliefs and windows of opportunity for action which occur unpredictably and require the timing of initiatives to be just right (Cerna, 2013). However, some research also indicates that policy continuity with the status quo is more likely than reform because of the challenges of creating the right conditions and getting stakeholders who favour policy change on board. Proposing and implementing policy reform in this environment is problematic as so many factors must be brought in alignment, and reform of any kind does require that the governance structures create an enabling environment that fosters change.

28. The education sector may be distinct from other public sectors, which makes reform in education particularly challenging for the following reasons (see OECD, 2010b):

- Teachers are generally viewed positively by the public even if there are typically greater levels of dissatisfaction within the education system in general. They often command greater public trust than politicians, so their resistance to reform will be particularly effective.
- The implementation of reforms is often impossible without the co-operation of the providers. They can easily sabotage reforms in the implementation phase, while blaming policy makers for having attempted misguided reforms in the first place.
- Teachers in many OECD countries are well organised, with strong, politically active unions. They usually have incentives to support only education reforms that would be beneficial for them, such as expansions of spending and access that would produce more teaching jobs, or higher pay and benefits (see Kingdon et al, 2014).
- There is a substantial gap between the time at which the initial cost of reform is incurred, and the time when it is evident whether the intended benefits of reforms actually materialise. This makes reform a thankless task when elections take place before the benefits are realised. Timing can be important also with regard to the sequencing of different components of reform, if one element - curriculum reform, for example - requires prior reforms in pre-service and in-service training in order to be effective.
- Uncertainty is prominent due to a wide range of actors (e.g. parents, students, teachers, employers and unions) with stakes in education outcomes.

- Multiple levels of governance exist which contribute to the uncertainty of reform and complexity of the education system.

29. Due to these factors, resistance to education reform is often the issue highest in the mind of reform-minded decision makers. The education environment is in certain respects distinct from that faced by policy makers in other areas, because of the large scale of the education enterprise (see OECD, 2010b). Education as a sector, especially schools and reforms thereof have been well protected in many countries despite drastic cuts elsewhere.

- Public spending on institutions alone (excluding financial support for students and families) is greater than 5% of gross domestic product (GDP) in OECD countries, and one of the biggest areas of public spending outside transfers.
- Educators are one of the largest occupational groups in the workforce; in 2007 instructional staff comprised, on average, some 4.0% of employment in OECD countries, a fact that reinforces the power of teachers and their unions.
- Education is a universal experience due to enforced compulsion. This makes most people invested and interested in education.
- Education is widely present but not always visible. Few people/stakeholders have a view of what takes place inside schools. Almost every community has a school it can call its own, and higher education and training institutions are more and more part of the local landscape and part of the workplace. As a consequence, interest in the status quo is more broadly and deeply vested in education than in other areas of public policy. Even small reforms can involve massive reallocations of resources, and touch the lives of millions.

30. In the end, policy reform is a political process (Cerna, 2013). Reich (1995) argues that for reform to succeed, policy-makers need effective methods to analyse relevant political conditions and shape key political factors in favour of policy reform. This is also the case for policy implementation.

31. It is also important to build consensus around reform goals and create ownership of the reform by stakeholders. Reforms often fail because of the lack of monetary and/or non-monetary incentives to stakeholders for generating support, such as perceived material, status and power gains; expansion of jobs, budget, trade unions and bureaucracies. Stakeholders' incentives and interests shape policy reform at all stages including policy design, financing, implementation and evaluation (Kingdon et al, 2014). Therefore, it is crucial to create an institutional system where all stakeholders are offered incentives for a variety of policy goals, such as to use resources efficiently, to improve student performance or to engage in more innovation in education (Kingdon et al, 2014: 5).

32. Reforms can happen with the help of unusual windows of opportunity to make structural changes in the education system. Such windows can open up, for instance, in a transition from different types of governments, parties or leaders, when education reforms are considered beneficial or incentive conditions change (Kingdon et al, 2014: 51).

33. Political timing provides opportunities for policy entrepreneurs to introduce ideas into the public debate and political management of group competition allows leaders to control the political effects of distributional consequences and protect a regime's stability. The opportunity to achieve policy reform is often affected by external events. For instance, change is more possible at the beginning of a regime, and major concurrent events can open up political windows for reform. Radical changes require careful consideration of timing, while minor incremental changes are not as dependent on timing (OECD, 2009a).

34. The politics of reform highlight that political will, favourable timing and suitable institutions are needed in order to push through change. The role of policy entrepreneurs is key in seeking out windows of opportunity. But passing reforms is not sufficient for the effective implementation of policies. Classrooms, and indeed educational systems, have to be 'recultured' to operate in the new contexts created by the reform in order to make it sustainable (Fullan, 2007). As a result, a number of conditions need to be satisfied to enhance the change of successful and sustainable implementation, though these conditions vary across systems and across reforms. Reforms to date have had difficulty to make a lasting impact due to the reoccurring issue of unchanging organisational cultures.

Box 2. Reform of the school inspection system in Poland

The Polish case study examines the implementation of an education reform in 2009, which changed the way in which pedagogical supervision, especially school inspection, is conducted in Poland. The reform sought to keep up with modern societal demands on education and became necessary because the former inspection system had major shortcomings, such as inefficient processes, unclear roles and tasks for inspectors, and the lack of a coherent policy approach for school inspections. The main goal of the reform was to combine internal and external evaluation in school supervision practice, in particular (1) monitoring compliance with the law, (2) supporting the work of schools and other education institutions, as well as teachers in performing their activities and (3) undertaking evaluation of education institutions. The case study looks at the governance of education within a multilevel system, and explores how the central and local levels co-operate in a system with strong school autonomy and local level decision making.

However, there were several challenges associated with the reform. For example, there was no common understanding of reform goals by the stakeholders, and led to conflict in the implementation process. Governance levels sometimes appeared to pursue individual agendas and persuaded other stakeholders instead of promoting the reform's ideas. Such power games, if persistent and systematic, can impede the overall success of the reform, unless the central level offers support and reassures the local level of its autonomy.

The reform placed greater emphasis on collaboration among stakeholders, intending to establish a sustainable culture of cooperation to support new processes. The changes introduced by the reform have deeply influenced a range of areas in the school system, such as the organisation of inspectorates as well as the attitudes of important actors in the education system regarding the relevance of data to support internal and external school evaluation. The reform also influences students' social and school life as the new approach to evaluation includes more stakeholders than before and requires more collaboration among school communities. Building a constructive culture with open dialogue and collaboration as part of school evaluation is rather new in the Polish context, where inspection has been traditionally seen as oppressive and even harmful.

Source: Mazurkiewicz, Walczak and Jewdokimow, forthcoming.

35. Educational reforms (for more country examples, see also OECD, 2015) vary in scope and extent across countries, but they are often fraught with challenges. As the Polish case study (Box 2) demonstrates, whether education reforms are successful depends on several factors including political will, windows of opportunity and stakeholder ownership, which is facilitated or not by the governance structure in countries. This aspect of governance is examined in more detail in the next section.

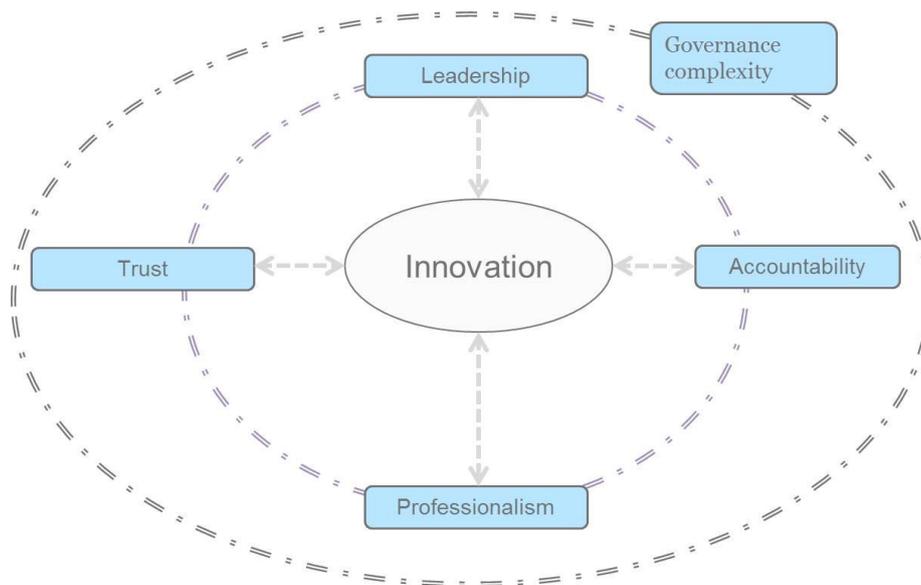
Governance

36. The drive to innovate raises fundamental questions about governance of reform and decision-making. How can the conditions be created to foster innovation? What kind of accountability mechanisms would instead foster innovation, encourage risk-taking and create a culture of trust? What kind of policy interventions can shape the organisational cultures in which trust can flourish, so that innovators can take the risks to step outside the conventional wisdom? How can the teaching profession be a driver of

educational innovation? What kind of reforms and governance structures are needed to enable this to happen? What kind of leadership do education policy makers need to develop in order to create a culture of innovation?

37. Below is a simplified figure of key themes, which are discussed in the following sections. Figure 3 demonstrates that several presented themes (such as leadership, accountability, trust, teaching profession/professionalism) are interlinked with innovation and between each other in a complex web of governance.

Figure 3. Key themes in education and innovation



Drivers

38. The previous sections have discussed some of the barriers to innovation in education, so this section examines how and by whom innovation is driven. Drivers can be defined as variables that trigger innovation, such as the decision of a senior level policy maker to develop a new programme (OECD, 2009a). There are many drivers of innovation, including economic, social, technological and political factors. These factors can be encouraged by governments or other stakeholders, while concomitantly minimising known barriers to innovation.

39. It is difficult to provide a definitive list of key drivers as the role a particular factor plays in the innovation process can change as a function of context and what in some circumstances could be a driver of innovation might in others act as a barrier. In addition, there is a challenge to isolate particular factors as driving any specific innovation as education is a non-linear complex system highly resistant to reductionism (OECD, 2009a).

40. Drivers are multiple and of different natures (see Box 3).

Box 3. Drivers of innovation

Among *economic* factors, globalisation and the resulting changes in economic conditions are generally considered to comprise a main driver of innovation. Times of economic crisis can also provide a window of opportunity to push for change as the economic restructuring processes may be accelerated (OECD, 2009a).

Among *social* factors, too many people now have inadequate skills for rapidly changing, knowledge economy.

Political factors can encompass regional, national and/or international spheres. Public institutions and policy makers can play a crucial role in initiating and steering the adoption of innovations in education systems through funding, legislation and leadership.

Among *technological* factors, the use of new technologies and especially ICTs is considered a consistent driver of innovation in design and delivery of education (OECD, 2009a; see also Avvisati et al., 2013; Foray and Raffo, 2012; Hennessy and London, 2013; Kärkkäinen and Vincent-Lancrin, 2013; and OECD, 2010a for some illustrative examples).

Another important factor in the analysis of drivers is *timing*. All countries go through cycles of political stability, which provide greater or smaller opportunities for implementing change and supporting innovation. Countries that have had shorter periods of political stability have an opportunity to develop and implement reforms and innovations relatively quickly. These innovations can also more easily be radical in nature as systems in political flux provide an opportunity for fundamental change. In countries with long cycles of political stability, the role of the constitution and regulatory framework is crucial, and while there is room for change and innovation, such change is much more likely to be incremental. Stability can be, and is, a driver of innovation, but the change is often too slow (OECD, 2009a).

41. Following from more general drivers of innovation (Box 3), factors that can drive innovation particularly in organisations can be exemplified by four pumps (OECD, 2004):

- Exploiting science, knowledge, and research and development (R&D)
- Networking and sharing knowledge
- Modular reorganisation
- Technological advance

42. These four pumps offer a helpful set of parameters for innovation in the education sector. For instance, creating and sharing relevant knowledge are critical as are new methodologies of evaluation appropriate for learning innovation. Technology has a large potential especially when it reshapes the different components, relationships, partnerships, and principles that are integral to learning environments. Implementing professional learning and organisational routines can help to break old institutional habits, enhance visibility, and maintain learning as the central activity. Networking is essential to create innovation across entire learning systems (ILE, 2013a).

43. Many innovation processes are the result of combinations between the different models described above. In the education sector, there may have been a tendency to use some pumps more actively than others (Michel, 2001). ICT and horizontal networks seem to have been more widely used than scientific R&D and modularity as a method to enable innovation (OECD, 2004).

44. Considering whole system reforms, Fullan (2011) describes many of the traditional reform instruments as the “wrong drivers”– accountability pressures, individual teacher approaches, technology without pedagogy, and fragmented strategies – because they do not lead to culture change. Therefore, systems should not be leading with these four drivers. Instead, the “right” drivers (i.e. a deliberate policy force that ends up achieving better measurable results for students) include the focus on the learning-teaching-assessment nexus; social capital to build the profession; pedagogy matching technology, and developing systemic synergies (OECD, 2013a). These drivers work directly on changing the culture of teaching and learning. The glue that binds the effective drivers together is the underlying attitude, philosophy, and theory of action (Fullan, 2011: 5). The right drivers embed both ownership and engagement in reforms for students and teachers. The Italian case of digitalising schools (Box 4) offers one example of the need to put pedagogy in the driver’s seat to use technology effectively. These drivers play an important part in encouraging innovation in complex education systems.

Box 4. Digitalising schools in Italy

The Italian National Plan for Digital Schools (Piano Nazionale Scuola Digitale) was launched by the Ministry of Education in 2007 to mainstream Information Communication Technology (ICT) in Italian classrooms and use technology as a catalyser of innovation in Italian education. The aim was that it would be conducive to new teaching practices, new models of school organisation, new products and tools to support quality teaching. The Plan was to equip Italian classrooms with ICTs, namely interactive whiteboards.

However, in 2012, 22 percent of classrooms were equipped with interactive whiteboards. At current pace, it would take over 10 years to equip 80 percent of Italian classrooms. The small budget of the Plan has limited the effectiveness of its diverse initiatives, so speeding up the process, offering more professional development for teachers to use technology in classrooms and greater funding for this Plan are needed. The Italian case of digital schools is a good example of focusing on pedagogic uses of technology and addressing the importance of professional development, but then experiencing budgetary constraints and delays in the equipment process as barriers to innovation. Nonetheless, it can serve as a front-runner to pilot and invent new learning environments, from which the Italian system can draw positive and negative lessons in the medium-term.

Source: Avvisati et al, 2013.

Complexity

45. In order to answer the questions on the forms of accountability, leadership, professionalism and trust which would best foster innovation, it is important to comprehend the complexities of contemporary education systems. In such systems many different levers have to work together to create open and innovation-friendly environments. The analysis of complexity makes us better understand what is happening and how stakeholders can deal with it, because it captures education as an organic complex eco-system in which various stakeholders interplay in non-linear ways. As such, flexible solutions are needed to respond to this complexity through coping mechanisms.

46. How can complex systems be defined? Sabelli (2006) cites a useful definition by Kaput et al. (2005) to identify some core components of a complex system:

- the interconnected components’ behaviour is not explained by the properties of the components, but rather emerges from the interaction of the components;
- the system is non-linear and relies on feedback to mould and shape its evolution; and

- the system operates on multiple time-scales and levels simultaneously.

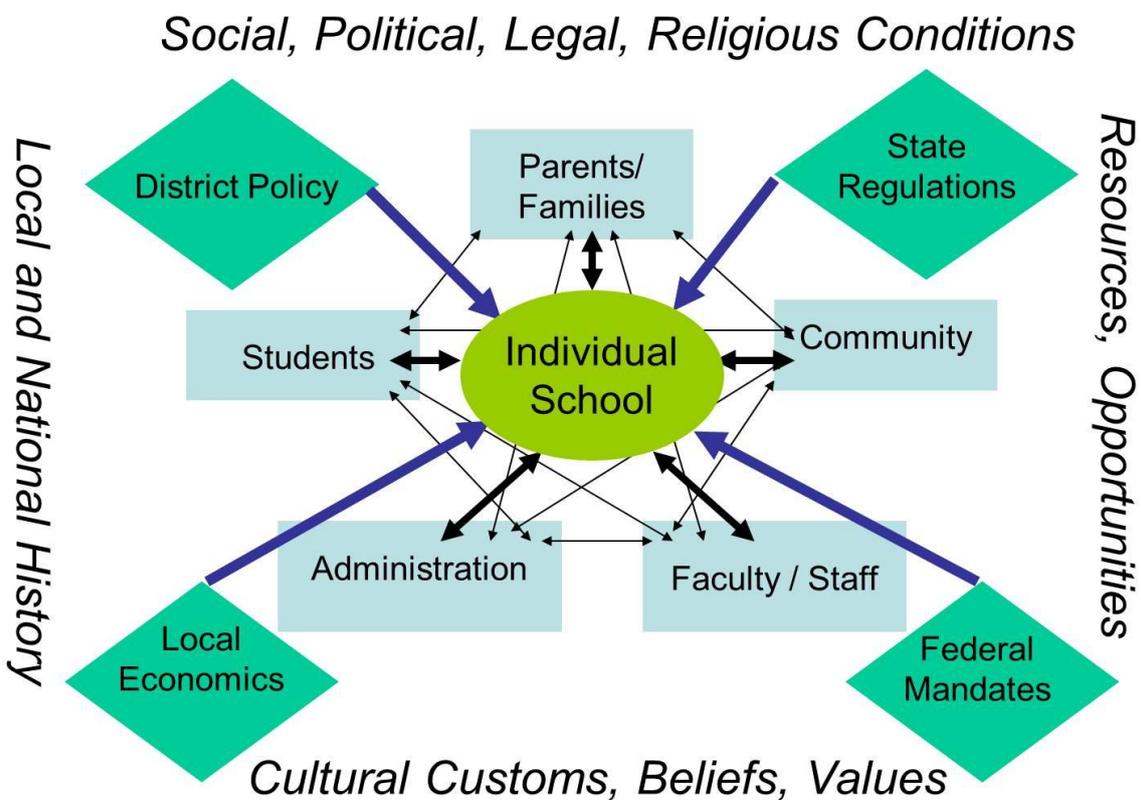
47. Complexity in education is not new. But a number of intersecting trends have intervened to increase complexity, such as (see Fazekas and Burns, 2012; Halász, 2003; Hodgson, 2000; OECD, 2007; 2010a; 2012a):

- the growing diversity of stakeholders' preferences and expectations, which places more demand on education systems;
- more decentralised and flexible governance structures;
- increased importance of additional layers of governance at the international and transnational levels;
- rapidly changing and spreading ICTs in which digital technology redefines the constraints of time and place for learners while diversifying the supply side;
- internationalisation of education which changes the nature and locus of governance and the demand for and supply of education;
- growing demand for lifelong learning which lies outside the formal policy domain.

48. As a result of the intersecting trends, the understanding of how education systems, players and relationships work – especially the recent focus on complexity – suggests that many of existing common-sense and accepted analytical models with which to address education systems are far from adequate. If they are simplistic and inaccurate it will not be surprising if the prescriptions based on them enjoy only disappointing results. The mechanical metaphors of much policy discussion, and the assumption of central policy omnipotence within well-defined and controllable 'systems', fit badly a world of multiple actors, global and local influences as well as the national/regional, where non-formal players and activity are fundamental. It is messy to think in much more organic terms - of eco-systems and complexity and emergence – but this is not a reason for looking back longingly to old models simply because they are neater. Thus some accepted approaches have to be re-examined through the lens of complexity.

49. One example of a complex education system is portrayed below (Figure 4). Different stakeholders interact with policies at several levels of governance, all within the political, historical, cultural and economic context.

Figure 4. A complex model of an education system



Source: Johnson, 2008: 4, kindly provided by the author.

50. There are several dimensions of this complexity in education systems, including:

- Strengthening of stakeholders and the non-linear interactions between them. Stakeholders in education now include parents, teachers, principals, municipalities, government (including all state and sub-state agencies), students, private actors, foundations, community, international organisations, universities, social partners (employers' associations, unions), researchers and media. Nonetheless, stakeholders can have differential impact on education depending on the type of education system. The most powerful stakeholders tend to be the government, teachers and parents, but this is not necessarily the case in all countries. Stakeholders do not operate by themselves or in a linear way, but in more complex, interactive and flexible patterns, such as through formal or informal networks, learning communities, learning environments and learning organisations.
- There is a differential role for governments in terms of steering and facilitating innovation in education. Governments are still held responsible for high quality, efficient, equitable and innovative education. To achieve these objectives, governments can, for instance, provide leadership and take the role of enablers or drivers of innovation, by creating spaces for innovation and providing flexibility to stakeholders to interact and collaborate in different ways. This governance can be described as a more iterative process, which is derived from constant feedback between all stakeholders and enables interactions between stakeholders to happen on multiple levels and time-scales. This can help organise learning and promote innovation. Innovative

change and reform can take place at different levels of governance, be it at the individual, classroom or systemic level. For example, reforms at the classroom level can have spill over effects to other classrooms and municipalities. The ILE reforms are about growing and sustaining so that denser clusters of 21st learning practices can be created.

- Complex systems do not work in a linear manner but rather exhibit a series of well-defined characteristics: tipping points, feedback loops, path dependence and sensibility to local contexts (Byrne, 1998). Complexity theory posits that systems begin as collections of individual actors who organise themselves and create relationships. These relationships form in response to positive or negative feedback – which are key to successful management in a complex system. New structures and behaviours then emerge as the actors act and react to each other, necessitating some degree of flexibility (Snyder, 2013). The centre can create a fertile environment that embraces the emergent nature of complex systems and work to create processes that maximise the flow of feedback between and across levels in a safe and manageable space. This will allow for self-organisation in which structures will emerge from the collaboration of all stakeholders (Morrison, 2010).

51. A main challenge in multi-level systems is the question of who retains the responsibility for oversight and steering, especially as there is a general trend towards more comparability and compatibility of curricula and education outcomes across regions and countries: even in very decentralised systems the central level needs to retain some steering competence, if national or international standards are supposed to be monitored and met (Wilkoszewski and Sundby, forthcoming). This asymmetry between the various governance levels leads to action and conceptual gaps in several areas such as information, capacity and accountability (Charbit, 2011; Charbit and Michalun, 2009).

52. For example, a Norwegian case study (Hopfenbeck et al., 2013) shows that with education expansion, responsibilities for the local level have grown over the past decades, resulting in an increasing number of laws and regulations whose implementation is at the discretion of the local level. The need for co-ordination and oversight across the various local units is even more required, as decentralised implementation can otherwise result in varying policy outcomes, inefficiencies and inequality between different municipalities and regions (see Wilkoszewski and Sundby, forthcoming).

Box 5. Decentralisation and complexity in Sweden

The Swedish case study examines the consequences of education decentralisation reforms in the early 1990s. Difficulties with a sudden shift from a traditionally centralised education system towards a more decentralised one were noticed early and confirmed later by international surveys such as PISA, which revealed that student performance was deteriorating while the gap between top- and bottom performers increased. The main difficulties were that central authorities did not provide enough support to municipalities, and especially smaller ones lacked local capacity to manage their new responsibilities. As a result, the reform has led to a mismatch between official responsibilities and actual powers of various stakeholders. The central government, steering education from far, has few tools to incentivise compliance with national goals. At the municipal level, financial resources are often allocated based on tradition and local politics rather than actual needs.

The Swedish case provides a look into the complexity of education governance, both in terms of the planning and implementation of reforms and for governance structures themselves. After a series of bold and innovative reforms, Sweden is experiencing first-hand the power and challenge of steering such multi-layered systems and the difficulty of changing course when reforms generate unexpected results. The country is facing a tipping point, and the timing is right to take advantage of the momentum for change. However, it is unclear whether the change can be channelled in the desired direction.

Source: Blanchenay, Burns and Köster, 2014.

53. One of the responses to complexity in education systems has been the changing relationship between the central, regional and local levels, moving away from a hierarchical relationship to a division of labour and more mutual independence and self-regulation (see Box 5). Institutional autonomy has been decentralised (though this has already happened to some extent since the 1980s): local authorities, school boards and schools have been allowed a greater degree of freedom to respond to diverse and local demands, for instance in the allocation of resources, or curriculum and assessment.

54. For instance, a study (see Kärkkäinen, 2012) on levels of decision making and curriculum innovation indicates that no OECD education system relies solely on a central or school-based approach in bringing about curriculum innovations, and systems differ in formal curriculum decision making. Out of 26 analysed education systems, 13 relied more on schools than on central level in bringing about curriculum innovations, while 8 out of 26 expected innovation to originate from centrally driven processes than from schools. Five OECD countries applied a mixed approach to curriculum innovation. Nonetheless, some structural elements can influence the ‘innovation power’ of the central curriculum and the ‘innovation flexibility’ of the school level curriculum. Decisions on curriculum innovations can be also influenced by different stakeholders (such as practitioners, experts, parents) at the central and school levels. In terms of formal and structural arrangements, education systems need to balance some central influence on curriculum decision making with enough flexibility at the school level (see Kärkkäinen, 2012).

55. In addition, education systems are now characterised by multi-level governance³ where the links between multiple actors operating at different levels are to a certain extent fluid and open to negotiation (Burns and Wilkoszewski, 2013). The complexity and governance question is so current in part because what might be considered the system has become much more diffused and more complex.

Box 6. Ontario Strategy

One example of a strategy to incorporate complexity in its design is the Ontario *Student Success/Learning to 18 Strategy* in Canada, which was an initiative implemented between 2003 and 2012 to improve education outcomes. Canada is a highly federated system, and education is the responsibility of the ten provinces and three territories. There the central provincial government and more locally-elected school boards share responsibility. Ontario identified key nodes by asking for feedback from all stakeholders and at all levels, through various forums and panels. The ministers and deputy ministers met regularly with provincial officers, teachers and principals, and outreach programmes were launched to parents and community groups to outline the key goals of the programme and processes by which they would be achieved. This approach created the necessary flexibility to implement innovative processes. Strong central leadership was linked with major investments in capacity-building and trust-building in the field. Overall, the Ontario strategy has achieved mostly positive results in the number of low-performing students.

Source: OECD, 2012d; Snyder, 2013.

56. One response to complexity has been artificial reduction (such as increasing communication, modernising qualification systems and making them more transparent, as well as trust-building) or the introduction of coping mechanisms. For example, Halász (2011) has analysed complexity and employer engagement in the English vocational and education training system. As the reduction of complexity was

³ It is “an arrangement for making binding decisions that engages a multiplicity of politically independent but otherwise interdependent actors – private and public – at different levels of territorial aggregation in more-or-less continuous negotiation/deliberation/ implementation, and [...] does not assign exclusive policy competence or assert a stable hierarchy of political authority to any of these levels” (Schmitter, 2004: 49).

not really an option in this case, one solution was to create and sustain innovative coping mechanisms that allowed those who led and managed the system to cope with complexity and uncertainty. These mechanisms included reducing accompanying risks, making processes more responsive to changing labour market needs and giving employers a more decisive role in determining supply (Halász, 2011). A new regulatory environment of the skills policy was established which enabled the expression of employer needs in different ways and at different levels – in order to achieve greater flexibility and thus improve the manageability of complexity.

57. Policy experimentation has been proposed as another strategy to respond to increasing complexity, and has been applied, to varying degrees, across OECD and non-OECD countries (such as a horizontal curriculum reform in China). Policy experimentation can be defined as “a purposeful and coordinated activity geared to producing novel policy options that are injected into official policymaking and then replicated on a larger scale” (Heilmann, 2008). This implies the deliberate implementation of a new programme or practice on a small scale, targeting a selected number of schools or districts, with the intention of evaluating the effectiveness and possible scaling up to a wider level (for a more detailed discussion, see Blanchenay and Burns, forthcoming). One type of policy experimentation is piloting – the pilot programmes only qualify as experimentation if they contain a comparison group and a proper evaluation phase to assess the results (Blanchenay and Burns, forthcoming). Another possibility is the less linear approach of prototyping. Prototypes are evaluative probes along the way which are tried in many sites rather than a small number of well-resourced and in-depth pilots.

58. Due to the increasing complexity, many systems have had to rethink governance structures. One policy decision has dealt with the scope and type of accountability in education, and how it can best balance different policy goals. The next section analyses some of these issues further.

Accountability

59. As a whole, education systems often uphold historical traditions, organisational cultures, professional models and accountability arrangements which favour obedience and discourage risk-taking. One of the challenges of complexity is that everyday education systems need to respond to several policy objectives, including more quality, efficiency or innovation. This raises different questions for accountability. For instance, what kind of accountability mechanisms would instead foster innovation, encourage risk-taking and create a culture of trust? Accountability can be defined as “holding those actors delivering governance to the society to be accountable for their actions” (Pierre and Peters, 2005: 5). There are no simple answers for accountability, since differently performing schools may need different accountability systems (Hooge, Burns and Wilkoszewski, 2012; see also Looney, 2011 on the alignment of standard-based assessment).

60. When governments grant some autonomy to municipalities or schools, there are greater demands to monitor and hold them accountable. It has been argued that accountability pressures have often led to an over-investment in testing and regulatory control (see Fullan, 2011). As such, a high degree of accountability can stifle risk-taking (Giddens, 1990; Reina and Reina, 2006), which is key for innovation. There is a strong tension between accountability and innovation, which can be resolved by trust.

61. Differences exist in the forms of accountability. For instance, Elmore (2002; 2008) argues that schools need strong internal accountability systems in order to respond in effective and coherent ways to externally administered incentives in accountability systems. No effective improvement process can be initiated inside schools and school systems unless they have the internal capacity to receive the message of an external incentive and translate it into a concrete and effective course of action (Elmore, 2002). However, this is difficult to do without a culture change in assessment. The institutional school system

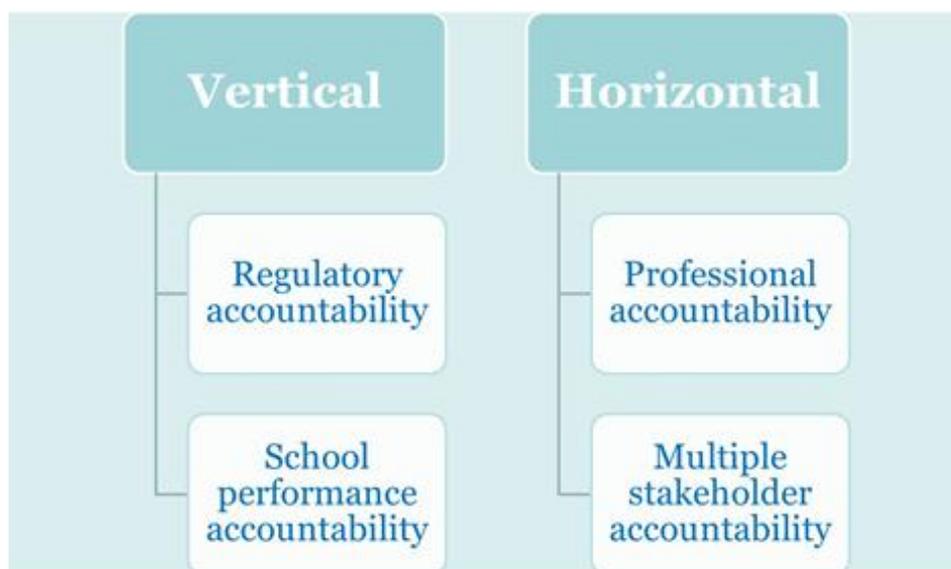
might develop into new forms of learning and thus some flexibility in approaches and structures is required.

62. In some OECD countries there has been a move to expand the notion of accountability to a multi-pronged approach that would include the data from school performance measures and augment it with assessment and feedback from other sources. These other sources involve elements of multiple accountability and structuring the exchange and relations between relevant stakeholders horizontally (Hooge, Burns and Wilkoszewski, 2012).

63. Different ways exist to promote governance arrangements in education including professional accountability and multiple stakeholder accountability which are closely linked to the issue of trust (see Figure 5). *Professional accountability* means trusting teachers by fostering teacher professionalism, developing professional standards, promoting collaboration and professional learning communities and updating the pedagogical knowledge of teachers (Hooge, Burns and Wilkoszewski, 2012). This is also one of the arguments for raising the status of the teaching profession.

64. *Multiple stakeholder accountability* means generating trust in the community. Schools are accountable to learners, parents, stakeholders and the community at large. They need to establish a relationship, obtain support and engage in capacity building. Processes of collective learning and feedback generate trust in the community. It is important to recognise different interests and needs among stakeholders, allow enough time to develop a trusting relationship and clarify roles and purposes such that all actors feel responsible (Hooge, Burns and Wilkoszewski, 2012). Multiple accountability aims to increase legitimacy and trust from local community through the processes of learning and feedback that it entails (De Vijlder and Westerhuis, 2002; Hooge and Helderman, 2008).

Figure 5. Horizontal and vertical accountability



Source: Adapted from Hooge, Burns and Wilkoszewski, 2012, by Van Damme, 2012.

Box 7. Accountability and complexity in Dutch schools

A Dutch case study on accountability in education analyses the effectiveness of policy instruments aimed at reducing the number of underperforming primary schools in a system with a long tradition of school autonomy. The Dutch Ministry of Education sees its main responsibility as ensuring the quality of the education system as a whole. Schools are responsible for performance, though if quality is lacking, the Inspectorate steps in. The case study shows how the highly decentralised system copes with very weak schools. Any strategy has to respect the autonomy of schools and ensure that each Dutch pupil receives quality education.

Schools that are labelled very weak receive interventions from the Inspectorate. However, the study suggests that there is no linear cause and effect driving changes in educational performance of schools. In contrast, similar interventions can create different results depending on the local context, history and staffing situation at the school. There are often chains of causes and consequences that interact in a circular pattern, leading to unexpected outcomes and self-reinforcing amplification mechanisms. In addition, these circular dynamics can take place between and within different levels, which further highlights the complex nature of the education system.

Source: Van Twist et al, 2013.

65. Different types of accountability can have varying effects on innovation. For instance, it might be fruitful to combine vertical accountability (i.e. top-down and hierarchical, enforcing compliance with laws and regulation and/or holding schools accountable for the quality of education they provide) with horizontal accountability, which assumes non-hierarchical relationships and can promote innovation in a high-trusting environment where teacher professionalism is valued (for more information, see Hooge, Burns and Wilkoszewski, 2012). This combination could build an efficient and effective accountability system that takes into account the nuanced nature and purposes of education. This could help improve the overall education system, policy for reform, and ultimately ameliorate the quality of education (Hooge, Burns and Wilkoszewski, 2012).

Box 8. Balancing trust and accountability in Norway

Norway's educational governance is highly decentralised, with 428 municipalities and 19 counties acting as school owners, which vary considerably in size, number of schools and competence at the municipal level. The Ministry of Education and Research is in charge of national education policy, while the school owners implement education activities, organise and operate school services, allocate resources, and ensure quality improvement and development of their schools.

Balancing trust and accountability has been a challenge in the Norwegian context. While high trust in the system exists, there are relatively few accountability mechanisms. As a result, few incentives (or sanctions) are in place for actors, creating problems for long-term implementation in the face of resistance. For example, the *Assessment for Learning* (AfL) programme aims to improve assessment practices in Norwegian schools (years 1-12). School leaders have to involve teachers in the process of developing school cultures based on a real understanding of the intentions or principles of AfL. Clear communication between the different levels and a high degree of trust amongst all stakeholders are necessary for a successful implementation of the programme.

Source: Hopfenbeck et al, 2013.

66. In complex, knowledge-based learning systems, evaluation is central to activity and direction. It is used to determine whether original goals have been met, but is also part of a much wider activity of experimentation in policy and practice in which it is providing spot checks about progress to inform further

progress rather than definitive answers in rapidly changing circumstances to original ambitions formulated several years before (see Earl and Timperley, 2014). This highlights the shift from summative to formative approaches.

67. As Box 8 demonstrates, there is a tension between accountability and innovation, which can be resolved by trust. But this is conditioned on choosing the right type or combination of accountability mechanisms. The next section explores trust and its important role for complex governance systems.

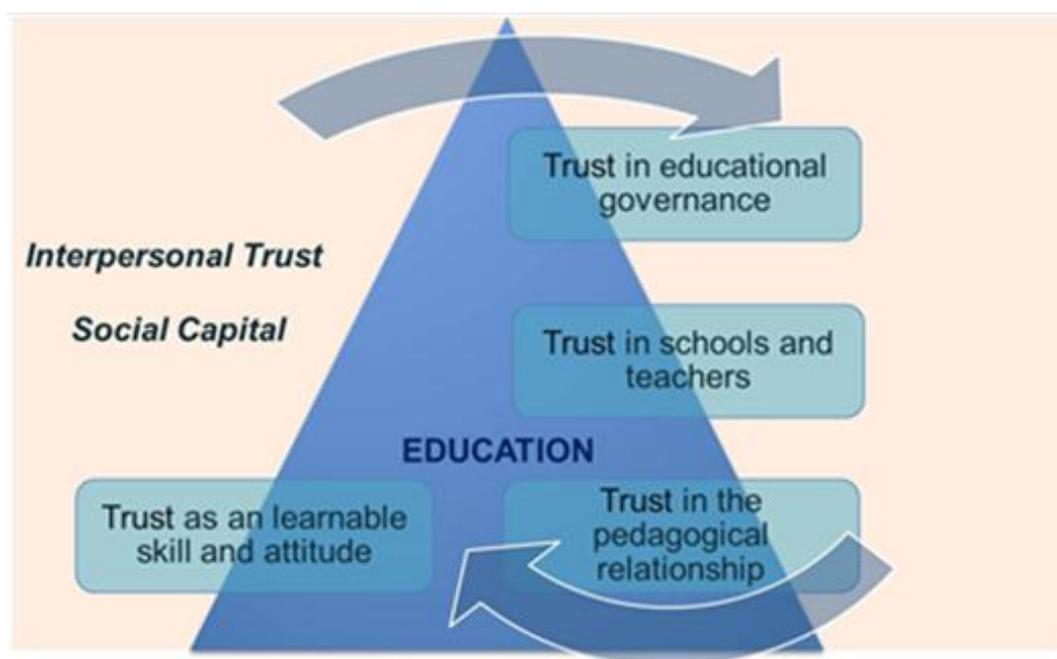
Trust

68. What kind of policy interventions can shape the organisational cultures in which trust can flourish so that innovators can take the risks to step outside the conventional wisdom?

69. Even though “everyone knows what it is, articulating a precise definition of trust is no simple matter, whether the context is interpersonal, organisational or societal” (Hoy and Tschannen-Moran, 1999: 185). Different forms of trust are evident, ranging from interpersonal, organisational to institutional trust, which creates further challenges (Cerna, forthcoming).

70. Broadly, trust has three constituent parts: “an expectation, a willingness to be vulnerable and a risk-taking act” (McEvily et al., 2003: 93). More specifically, trust is an *expectation* that other members of the community will behave in a co-operative and honest way (Fukuyama, 1996; also Van Houtte, 2007), a “*willingness to be vulnerable* based on the confidence that the other party is benevolent, reliable, competent, honest and open” (Hoy and Tschannen-Moran, 1999: 189) and a dynamic process in which parties are involved in a series of interactions which require some *risk-taking* or faith (Becerra and Gupta, 1999; Tierney, 2006). Trust can play an important role on both the left (developing trust as a skill through education) and right side of the pyramid (Figure 6), though the following sections mostly deal with the right side.

Figure 6. Trust and education



Source: Van Damme, 2012.

71. Trust is key to the success of several different factors and strategies in 21st century learning systems. It enables stakeholders to take risks, facilitates interactions and co-operation, and reduces the need for control and monitoring (Levi, 1998; see also Van Maele, Forsyth and Van Houtte, 2014). Trust offers flexibility to stakeholders to propose and implement innovative changes and reforms. It allows engaging parents, students and communities as active partners. Other factors such as high levels of professionalism and attractiveness of teaching depend on it. In addition, in complex systems, trust is part of the glue and understanding that allow eco-systems to function well, which means they do not depend on formal bureaucratically defined relationships.

72. A common misconception is that once non-co-operation or untrustworthy behaviour is observed, a return to the co-operative or trust solution is not possible, but there is some empirical evidence that trust in different forms can be rebuilt (Jonker et al., 2004). For example, trust could be enhanced by greater communication and transparency between different stakeholders (Carless, 2009: 86). Building trust, however, is a lengthy and difficult process, and it is the result of co-operation and a condition for it. Therefore, it is useful to “select conditions that are conducive to the emergence of trust, such as placing not too much focus on mistrustful means of governance” (Nootboom, 1996: 989).

73. Policy makers can play an important role in creating conditions which facilitate the emergence of trust. However, the question remains as to which structures would favour conducive conditions for building trust. For instance, Cosner (2009) argues that principals who emphasise teacher interaction and collaboration complained about insufficient time to actually interact and build collegial trust. Principals then changed structures in order to increase interaction time by, for example, rethinking the daily schedule at school, organising more meetings and introducing a teacher room.

74. Trust can facilitate innovation because it can reduce uncertainty about opportunistic behaviour. This is important in a high stakes and traditionally risk adverse field like education. Trust increases the feeling that other actors will exercise their goodwill in the joint search for innovation solutions and creates spaces for innovative approaches and the exchange of ideas (e.g. Nootboom, 2010; Parker and Vaidya, 2001; Ring and Van de Ven, 1992). For example, in schools with high teacher collegial trust, teachers are more oriented towards innovation as they are more willing to try new practices and are more open to change (Bryk and Schneider, 2002).

75. School leaders, teachers, parents and students need to view trust as the bridge that reform must be carried over, as educational change is difficult to do in low-trust settings (Hargreaves, 2002; Louis, 2007). The strengthening of a culture of trust in education requires a form of accountability which supports rather than diminishes the professionalism of teachers. This implies a form of accountability that recognises the ethical obligation on the part of professionals to offer an account of (or a justification for) their actions. The moral agency of the professional is also fully acknowledged (Codd, 1999: 203). Similarly, Brien (1998) argues that cultivating a culture of trust can promote ethical conduct indirectly by providing an ideal of professionalism.

Box 9. Trust and professionalisation in Finland

Finland serves as a good example of the link between trust and professionalisation. The education system was highly centralised until the early 1990s: central agencies regulated schools, and teachers were subject to a dense network of rules and orders. However, a gradual shift towards trusting schools and teachers began in the late 1980s, and the era of a trust-based school culture started some years later. Trust in teachers and school principals by parents, students and the authorities was key for reforming the education system and smart accountability (OECD, 2004: 176).

Under the reformed system, the government has granted teachers greater autonomy regarding the curriculum and accountability once teachers' quality has improved. But without high trust levels, it would not have been possible to reduce the detail of the curriculum specification, eliminate test-based accountability and close down the directorate (Tucker, 2011).

Overall, the culture of trust means that education authorities and political leaders believe that teachers, principals, parents and their communities know how to provide the best possible education for their children (OECD, 2014a). Trust can only flourish in an environment built upon honesty, confidence, professionalism and good governance (Sahlberg, 2010). However, other contextual factors might contribute to the high trust in Finland, such as a homogenous society, particular history, and societal values (see Lewis, 2005).

76. Trust plays an important role for accountability and innovation since it encourages risk-taking and allows giving autonomy to stakeholders. In complex systems, trust is part of the glue and understandings that allow eco-systems to function well. As Box 9 shows, a culture of trust between stakeholders can develop if an accountability system is set in place which strengthens the professionalism of teachers. Therefore, it is crucial to develop the teaching profession and encourage professionals to engage in innovative practices. These aspects are highlighted more in the next section.

Professionalism

77. Closely linked to accountability and trust is professionalism (see Box 9 above). How can the teaching profession be a driver of educational innovation? What kind of reforms and governance structures are needed to enable this to happen?

78. To begin with, this is about the movement to raise the status of the teaching profession, which for some is seen as a major shift in culture from viewing teachers as civil servants to viewing them as autonomous professionals that hold specialist knowledge of their domain – learning. The previous section highlighted the importance of professional accountability in trusting teachers by developing teacher professionalism and collaboration (Tschannen-Moran, 2001). Professionalism is defined as efficiently rendering a specialist service based on a body of knowledge (Morris, 2004). Professionalisation as a process is about being delegated sufficient trust to be accorded self-governing status (Morris, 2004). It involves giving the teaching force increasing responsibility for scrutinising and evaluating the practices of its members (Morris, 2004, see also Elliott, 2004). Teacher professionalism is constantly changing and being redefined (Helsby, 1999), in part due to increased control by governments (Hargreaves, 1994) or changing demands on teachers, such as dealing with more diverse classrooms and teaching 21st century skills (OECD, 2013e).

79. Teachers as professionals often engage as active agents in educational reform and innovation and act as leaders in proposing and implementing innovative change. Ownership can increase innovation and effective reforms in schools. Teachers are granted trust to implement innovations because policy makers

and other stakeholders including parents greatly value teachers as professionals. Even though innovative teaching is recognised in school evaluations and teacher appraisal systems, the 2008 OECD Teaching and Learning International Study (TALIS) (OECD, 2009b) report indicates that three out of four teachers reported that they would not be rewarded for more innovative teaching. Thus the incentives for encouraging innovation seem to be missing, including monetary or non-monetary rewards or recognition in front of colleagues (Schleicher, 2012; 2014).

80. TALIS shows that some teachers do engage in innovative pedagogical practices (OECD, 2014d) and, moreover, that teachers who use innovative practices are more likely to participate in collaborative pedagogical activities, seen as a form of professionalism (see Box 10).

Box 10. Innovative pedagogical practices and teacher professionalism

The Teaching and Learning International Survey (TALIS) is an international survey focused on the working conditions of teachers and the learning environment in lower secondary schools. It uses self-report questionnaires and representative samples of schools and teachers within schools and their school leaders (OECD, 2014). The most recent cycle of TALIS was conducted in 2013 and covered 33 countries.

A conceptual framework of teaching practices was developed for the TALIS 2008 round that used a socio-constructivist approach as a measure of pedagogical innovation, and that identified high-quality teaching practices through studies of educational effectiveness (OECD, 2012b). Using this framework, two sets of high-quality pedagogical practices were identified as innovative: (1) student-oriented practices (e.g. self-directed learning, self-regulated learning, co-operative and problem-based learning) that include support and interaction with the teacher and whole class, small groups or adaptive; and (2) practices that employ cognitively challenging activities that give students the chance to work independently over a longer period of time (e.g. small group work, project-based learning). TALIS 2013 data indicate that innovative practices were used by teachers in all countries, but only a minority of teachers made frequent use of them.

Participation in professional learning communities was also identified as innovative, which includes socio-constructivist features such as collaboration with peers (e.g. joint teaching, exchanging materials), having a shared vision and common goals, a focus on learning with common standards for assessment of student progress, reflective inquiry and observing other teachers' classes and giving feedback (OECD, 2012b). Participation in professional learning communities, and in particular, collaborative teaching, is seen as an indicator of teacher professionalism. TALIS 2012 data showed that teachers who engaged in collaborative activities were more likely to report using innovative practices such as small group work, long-term projects, and class work or projects requiring the use of ICT.

TALIS data show that teachers who engaged in collaborative activities were more likely to report higher levels of self-efficacy, and higher levels of self-efficacy are related to better student outcomes. Teachers also reported higher levels of self-efficacy if they worked in schools where they were provided with opportunities to actively participate in school decisions. These data indicate that teachers can be viewed as professionals and granted trust to participate in decision-making and to take on a leadership role in implementing innovative pedagogical practices.

81. A consequence of the professionalisation of teaching is that teachers become responsible for processing new knowledge relevant for their core professional practice and for regularly updating their knowledge base in order to improve teacher quality (Guerriero, forthcoming). Teachers also increasingly need to develop new competences in order to help students acquire 21st century skills (e.g. collaboration, problem-solving, communication and creativity), ensure social cohesion and well-being of all students, participate in more distributed school leadership and management roles in response to greater decentralisation and school autonomy (OECD, 2013e). This is especially important in times of ageing teaching workforces, high attrition rates of new teachers and teacher shortages in particular areas.

82. But one of the barriers to raising the status of the teaching profession is precisely the lack of an integrated knowledge base (Hiebert, Gallimore and Stigler, 2002; Shulman, 1986;1987). Having an

adequate knowledge⁴ base, be it general tacit knowledge or explicit knowledge (such as academic and research evidence, professional and practitioner knowledge, administrative data and statistics) (OECD, 2009a), is crucial for the innovative process. While education has always been concerned with knowledge, knowledge has played an ambiguous and imperfect role in improving the effectiveness of education systems. In particular, there has not been a straightforward translation of educational research into practice, applying what is known about effective educational approaches directly into classrooms and lecture halls (OECD, 2004). The research community has not done a good job of providing evidence in forms and formats to be used by the worlds of policy and practice.

83. Berliner (2008) calls it the ‘great disconnect’ between research, policy and practice. Research might not always be accessible to teachers and policy-makers, and there is a difference between ‘knowing about’ and ‘implementing’ research processes. The abstract and simplified research from educational scientists does not easily cross over to the concrete and complex world of practice. Practitioners often use educational research sparingly because teachers usually teach in their own classrooms and are under little pressure to engage in changes. In addition, changing teacher behaviour based on research findings may add uncertainty to classroom life, whereas teachers like to keep order. Another reason is that the complexity of life in classrooms means that educational research may only be able to provide practitioners with rules of thumb and not rules of practices (Berliner, 2008: 312). Berliner (2008) suggests that more research about how to make things actually work in the setting we want to improve should be conducted.

84. Moreover, there has not been a great deal of support for the production and use of research evidence in the classroom (even though some exceptions exist, such as Finland and Singapore). The teaching profession does not often see itself as practitioner-researchers, learning on the basis of research into their own activities by their peers. This is in contrast to doctors, who are trained to use and contribute to the medical research agenda. Encouraging the understanding and use of research by school leaders themselves could be particularly important for pedagogical research, both in terms of the validity and generalisability of field-based studies, and also as a way to encourage implementing research-based reform. If the research itself is valued and used (and conducted) by school leaders, the shared ownership will encourage its implementation in a way that something imposed externally by researchers on teachers will not.

85. Thus, the move to making teaching a profession requires a great deal of capacity building, reform and new governance structures (OECD, 2007: 21). It implies a degree of teacher and school autonomy such that teachers could act on the basis of their specialist knowledge to integrate new research findings (OECD, 2007: 25). For this to happen, the profession needs new governance structures where the profession itself is a major player in setting the policies that govern their work, such as entry requirements, teacher education curricula, qualifications for teacher educators, and regulatory or licensing standards for practice.

86. Professionalism is a crucial component in educational innovation and for education systems in general. For instance, teachers as professionals often engage as active agents in educational reform and innovation and act as leaders in proposing and implementing innovative change. Leadership is analysed further in the next section.

⁴ Knowledge is assimilated information and the understanding of how to use it where information is organised data understood in its context and data constitutes the raw bits of information (Hess and Ostrom, 2007: 8; Davenport and Prusak, 1998).

Leadership

87. What kind of leadership do education policy makers need to develop in order to create a culture of innovation? Leadership is an important driver at all levels of innovation but more broadly, it is central to all the themes discussed in this paper. Leaders (such as teachers, principals, administrators, parents, students or politicians) are agents of directed change, and are thus key for driving innovative change and reforms. Leadership refers to the level of ownership and support given by the leaders who will manage the daily activities of those using the innovation (OECD, 2009a: 84). It provides vision, sets direction for learning within increasingly complex organisations, and is about seeing that through into design and strategy (OECD, 2013b).

88. Leadership is necessary to drive and sustain any (successful) innovative change, and to ensure that learning remains at the centre of innovation. For instance, a McKinsey report concluded that an education system could become better, no matter what its starting point, given a sustained leadership and a focus on key interventions necessary for systematic improvement (Mourshed et al., 2010).

89. There are several forms of leadership, ranging from learning, innovation, instructional to organisational. For example, the ILE project highlights learning leadership because learning is the core business of education. As a result, learning leadership is about fostering and guiding learning change but it is also innovation leadership – promoting, facilitating, organising and managing the innovation endeavour (OECD, 2013b: 18).

90. Leadership can happen at different levels, moving from the micro level of schools and learning environments, to the meso level of networks and communities of practice, to the macro level of systems and policies (OECD, 2013b). At the micro level, school leadership is important to improve teaching and learning within each school and to connect the individual school to the outside world (OECD, 2008b). It can ameliorate school outcomes by influencing the motivations and capacities of teachers, as well as the school climate and environment. Effective school leadership is essential to improve the efficiency and equity of schooling, as well as for education reform (OECD, 2008b). School reform is more likely to be successful if school leaders are actively involved in policy development and formulation.

91. At the meso level, leadership in learning networks is key. Learning networks consist in joint learning forums, workplaces and research and development units (such as universities, research institutes, polytechnics or other educational institutions). The school can also be seen as a professional learning community, which seeks to improve teaching practices involving staff in collaborative activities of professional development at the school level, and establishing a school culture promoting student learning by setting values, norms and shared expectations among teachers (Hord, 1997; OECD, 2012b; 2013c; 2013d). Here leadership plays an important role in guiding such learning communities.

92. Besides the micro and meso levels, leadership is needed at the macro (system) level. Overcoming barriers to innovation requires wider policy strategies that create conducive conditions and climates, given that they involve relatively intangible and powerful cultural assumptions and behaviours. Policy leadership can prove useful in helping to shape such conditions and climates so as to make the difference between learning innovation being regarded as a mainstream activity or viewed as marginal to core business (OECD, 2013a; see also Box 11). Political leaders (such as ministers and senior officials) can send strong messages about the importance of innovation and help create a culture in which innovators are valued, recognised and rewarded, and where innovation is seen as an integral part of everyone's job (OECD, 2009a: 48). Strong leadership capital, however, does not just emerge; it needs to be developed and cultivated. Leadership recruitment and development should be a key part of any successful improvement strategy (OECD, 2008b).

Box 11. Political leadership in Germany

Political leadership can be highly instrumental in bottom-up innovations (OECD, 2009a). One example is the German *Learning vor Ort* initiative, aimed at building capacities for education monitoring and management, as well as creating sustainable networks between local administrations and civil society actors. In a decentralised system where the federal government has very limited powers in education policy, it is up to the local level to implement this initiative. The study findings indicate that several local factors influence the effectiveness of the implementation of the programme, including political leadership and support from the head of the local government, in particular during critical situations in the implementation phase. Such leadership is key especially as the process of network development relies on voluntary participation and co-operation.

Source: Busemeyer and Vossiek, forthcoming.

93. To drive innovation and reform forward, leadership is needed at all levels of governance, whether it be individual, classroom or systemic, and all stages of policy reform ranging from policy design to implementation. Besides innovation, leadership also plays a key role in achieving other policy objectives, such as raising quality and equity in school outcomes.

CONCLUSION

94. The education system is often seen as not prone to innovation due to an inherent conservatism in the profession. However, recent findings indicate that there is as much innovation in education as in other public sectors. Therefore, this raises questions for the governance of reform, including what types of accountability, trust, professionalism or leadership can facilitate and create a culture of innovation in increasingly complex education systems.

95. This paper has highlighted that in contemporary education systems, for instance, horizontal accountability combined with strong professionalism and trust may generate a culture of innovation, especially when supported by strong learning and political leadership. Nonetheless, the context and specific conditions in countries and education systems need to be taken into consideration as there is no one-size-fits-all solution. A great deal depends on how policies are interpreted and implemented in practice. In addition, it is also dependent upon the ways in which systems try to resolve tensions between often conflicting objectives. Some of these tensions will be examined further in the transversal and project sessions at the CERI Conference.

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