Educational Research and Innovation

Innovative Learning Environments

Centre for Educational Research and Innovation

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"Much has been written about learning environments, and about innovation but nowhere will you find such a deep and cogent portrayal of the key principles as in the OECD's report, *Innovative Learning Environments*. Learners, pedagogical core, learning environments, partnerships, sustainability – it's all captured in this remarkable volume."

(*Michael Fullan, OC, Professor Emeritus,*
OISE, University of Toronto)

"Everyone in education is talking about innovation. What is different here is that the best of what we know about learning is at the centre and is richly illustrated with real cases to answer the question, 'What will this look like?'"

(*Helen Timperley, Professor, Faculty of Education,*
University of Auckland)

"From OECD's *The Nature of Learning* to *Innovative Learning Environments*, this second ILE volume inspires and guides all who are committed to creating, enacting and sustaining powerful learning. In this 21st century, designing and enabling deep learning is the shared goal of individuals, communities and economies across the globe. To know that this is possible – that we can and are creating 'schooling for tomorrow' today – is the gift of this book."

(*Anthony Mackay: Co-Chair, Global Education Leaders Program;*
Chair, Innovation Unit UK)

"What impresses me about this work is the clarity about the links between complex goals, processes and outcomes through a focus on innovative learning environments across the globe. *Innovative Learning Environments* manages both to bring alive the lived realities of very different people at the same time as distilling principles and key messages. This is a book that people concerned about education can learn from whatever their starting point."

(*Philippa Cordingley, Chief Executive,*
Centre for the Use of Research and Evidence in Education (CUREE), UK)

"As societies experience unprecedented and unpredictable change, schools and education systems are at the nexus of hope for the future. OECD's report *Innovative Learning Environments* documents how educators in a number of countries are engaging in bold and forward-thinking innovations to renew, re-imagine and re-invent contexts for teaching and learning. The ILE framework gives a powerful conceptual steer for how this can be done and the case studies are vivid descriptions of the "real world" of transforming environments into places for learning. This volume offers concrete examples, shows the hard work that creating context for learning requires and, most importantly, provides inspiration to take the journey."

(*Professor Lorna Earl, President 2011-2013,*
International Congress for School Effectiveness and Improvement)

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OECD
BETTER POLICIES FOR BETTER LIVES

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Foreword

Innovative Learning Environments (ILE) is an international study carried out by the Centre for Educational Research and Innovation (CERI) of the OECD. It is focused on innovative ways of organising learning for young people with the view to positively influence the contemporary education reform agenda with forward-looking insights about learning and innovation. ILE began as an integral part of the OECD/CERI work on Schooling for Tomorrow but represented a substantial departure from it, with its focus on learning rather than schooling and on beginning first with the micro level of learning environments before extending the view to more systemic implications (rather than the other way around).

There was an initial scoping phase with Mexico playing a leadership role; this resulted in the first publication *Innovating to Learn, Learning to Innovate* (OECD, 2008). The three strands of ILE that emerged when it was established as an international study in its own right – "Learning Research", "Innovative Cases", and "Implementation and Change" – describe the organisation of the project but they are much more than this. The design reflects the belief that a critical starting point to consider innovative change in the organisation of learning is the close understanding of learning itself. This first research strand resulted in *The Nature of Learning: Using research to inspire practice* (Dumont, Istance and Benavides (eds.), 2010). The next main component in the project design was immersion in what practitioners have actually been working with around the world in their own innovative learning environments – "the Innovative Cases" – as described below. Having thus developed frameworks of research-based principles and of the organisational architecture of learning environments, and having identified a wealth of inspiring learning innovations, this has then established a substantial foundation on which to consider more widespread change strategies. The latter work on "Implementation and Change" is still on-going.

This volume is the culmination of the second, "Innovative Cases" strand of the ILE study. That strand began after work on learning research had been launched but well before it had concluded and was not designed, therefore, in full knowledge of the outcomes of "Learning Research". The project needed to engage the interest and input of systems, innovators, and decision-makers from early on. Cases began to be compiled, the template for which is in Annex B. A selection was made from within them to provide a set of more detailed case studies – dubbed the "Inventory" – that differed in kind as well as in analytic detail from the self-report information provided in the original submissions.

The result is a substantial international set of cases of innovative learning environments. In all, there were 125 cases retained in the project "Universe" from 29 systems in 23 countries. Of these, 40 were selected for the more in-depth case study research in the "Inventory", and their experiences have provided the core material for this volume, captured as far as possible in the words of the original case studies. This research mainly took place in 2010-11, with final case studies completed in 2012. A list and capsule description of each of the 40 case studies are contained in Annex A; the protocol used to

guide this research work is summarised in Annex B. The innovative learning arrangements being sought, as well as the concept of "learning environment" underpinning this request, are discussed in Chapter 1.

An over-arching aim of this volume has been to do justice to such an extensive and rich data set. To achieve this, we have adopted the device of reproducing extensive edited extracts from the cases so as to avoid losing the detailed insights through the act of synthesis. A further over-arching aim has been to develop the dimensions and concept of "learning environment" so as to give appropriate terms and tools for those working in this field. The specific aims of this volume are four-fold:

- First, to elaborate and present the framework devised through the ILE project through which to understand "learning environments" in general and "innovative learning environments" in particular. They comprise the basic structure of the report, and are brought together in Chapter 8. The frameworks have been developed iteratively, using the experiences of the case studies both to illustrate the different dimensions and to refine them.
- Second, to give detailed insights into how innovative schools and learning environments are making their innovation happen through close attention to the innovative practices in the cases, especially but not only those developed into the full case studies.
- Third, to locate the ILE "learning principles" lying at the heart of our framework for powerful, innovative learning environments within the concrete practices of actual cases (Chapter 7). The cases in our study fit closely these demanding principles, described in this report as criteria for "21st century effectiveness", and provide a rich database for bringing these principles to life in diverse ways.
- Fourth, the report provides a bridge from the first two "Learning Research" and "Innovative Cases" strands to the third "Implementation and Change" strand by discussing some of the key drivers and dimensions of change, when the focus shifts from isolated exemplars towards more widespread and sustained innovation (Chapter 8). This includes examination of the four "pumps" of innovation identified in previous OECD/CERI work: knowledge and R&D, modular reorganisation, networking, and technological advance.

This volume was prepared by David Istance of the Secretariat, with his colleagues Marco Kools and Mariana Martínez Salgado. Lynda Hawe, Jinyuan Ma, Janina Cuevas Zuninga, Elizabeth Del Bourgo and Isabelle Moulherat worked on the finalisation of the text prior to publication and Peter Vogelpoel did the layout of the publication. It is published on the responsibility of the Secretary-General.

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There were a number of events that contributed importantly to the "Innovative Cases" strand of the ILE project that has resulted in this report; we are very grateful for the generous hospitality and organisational work of all those involved. In December 2010, Heidelberg University of Education, Germany hosted a meeting of ILE co-ordinators and experts. Among those who contributed to its organisation special thanks go to Anne Sliwka and Britta Klopsch. An International Conference on Innovative Learning Environments was held in Banff, Alberta, Canada on 10–12 October 2011. This was co-organised with Alberta Education (Alberta's ministry of education), and local hosts the Canadian Rockies Public Schools District. Among the many who contributed to making this a success particular thanks are due for Keray Henke, Don Napier, Marieke Dube and Kim Bater. A further international conference on ILE took place in Santiago, Chile on 7-9 January 2013, co-organised with the Chilean Ministry of Education, which *inter alia* provided invaluable final comments on a penultimate draft of this report. Again, many were involved in its successful organisation, and particular thanks are extended to Francisco Lagos Marín and Eliana Chamizo Álvarez.

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Executive summary

Innovation is a key element of today's societies and economies, and that includes how we learn. This report looks at inspiring cases of innovative learning environments from across the globe, as part of the OECD's Innovative Learning Environments (ILE) project. The project has gathered 125 examples from more than 20 countries and carried out detailed case study research on 40 of them. These cases have been identified within their own system as significant departures from mainstream learning arrangements for younger children or older teenagers, while promising to meet the ambitious objectives needed for the 21st century.

In this report, a "learning environment" is as an organic, holistic concept - an eco-system that includes the activity and the outcomes of the learning. Some of the innovations examined are in places called schools and others are not; in either case, the report argues in favour of different units of analysis than the institutional variables of "school" or "classroom" when the aim is to understand and to innovate learning. More appropriate units have been shaped into a new framework that provides the structure of this report.

This report analyses in detail the practices revealed in the case studies. It lets the cases "speak for themselves" by illustrating the different issues and dimensions with extensive edited extracts.

Innovating the core of learning environments

The key elements and dynamics at the heart of each learning environment are termed the "pedagogical core".

This is composed of four elements: **learners**, **educators**, **content** and **resources**. Rethinking these core elements is fundamental to innovating any learning environment. New **learners** may be added in innovative ways, for example by using the Internet to bring learners together in virtual classrooms or when parents become learners. **Educator**s aren't necessarily teachers, however essential teachers are; it may well be that different experts, adults or peers are brought in to teach alongside them. Approaches to innovating **content** include developing 21st century competences such as social learning; making connections among traditional subjects through inter-disciplinary approaches; and emphasising specific knowledge domains such as language or sustainability. On **resources**, this report focuses on the use of different digital resources as well as innovation in facilities and the definition and use of learning spaces.

Organisational dynamics and choices connect these core elements. They are such a familiar part of school routines and cultures that often they pass unnoticed but in reality they powerfully structure what takes place. This report focuses on four sources of change in these core relationships**: regrouping teachers** and other educators into teams**, regrouping learners** beyond fixed age/grade classes**,** rethinking the use of **learning time,** and innovating **pedagogy and assessment.**

Learning leadership, design, evaluation, and feedback

Leadership is essential to direct change and to sustain it, and to ensure that learning remains at the centre of innovation. That requires vision, but also design and strategy to implement it. Educator professional development is critical to acquire the expertise to contribute to learning leadership, orchestrate teaching and learning activities, shape content and learning resources, and become confident formative evaluators and researchers. Learners themselves can importantly shape content and direction.

Information about the learning taking place should be constantly fed back to the different stakeholders, and into revised strategies for learning and further innovation. Richness of information about learning strategies, students, and learning outcomes quickly becomes overload unless that information is converted into meaningful evaluative knowledge that can be acted upon by the learning leadership and others.

Extending capacity through partnerships

The contemporary learning environment should develop strong connections with other partners so as to extend its boundaries, resources and learning spaces, bringing in such partners as local communities; businesses, cultural institutions, and/or those of higher education. Among the most important partners to any learning environment are other learning environments, forging synergies through networks and communities of practice. Creating wider partnerships is both outward-looking and about enriching the pedagogical core. To innovate and to sustain that change means to overcome isolation through working with different knowledge and community partners.

Implementing innovative learning principles

The Innovative Learning Environments (ILE) principles should run through all these different layers, activities and relationships. These principles state that in order to be most effective, learning environments should:

- Make learning and engagement central.
- Ensure that learning is social and often collaborative.
- Be highly attuned to learner motivations and emotions.
- Be acutely sensitive to individual differences.
- Be demanding for each learner but without excessive overload.
- Use assessments consistent with learning aims, with strong emphasis on formative feedback.
- Promote horizontal connectedness across activities and subjects, in and out of school.

All the principles should be met, not a selected few. This report devotes a chapter to matching the case studies to these learning principles and it finds a very close fit.

Generating innovation

Earlier OECD analysis has identified four sources, or "pumps", of innovation no matter what the sector:

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

These offer a helpful set of parameters for innovating in learning environments. Creating and sharing relevant knowledge are critical as are new methodologies of evaluation appropriate for learning innovation. Technology has enormous 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.

The ILE study continues to compile and analyse promising strategies for changing learning environments, and for spreading and sustaining innovative practice on a wider scale.

Chapter 1

Learning environments and innovative practice

This chapter reiterates the "learning principles" from the learning research phase of the ILE project and how they should guide the design of all learning environments. The chapter reviews insights from both the school effectiveness and school improvement traditions: it observes both consistency of ILE work with important findings from these traditions and some problems they give rise to. Extending the focus more directly on learning, rather than schooling, two additional framing concepts are considered: "learning approach" and "learning environment". The chapter reviews two sets of learning approaches – those associated with alternative schooling and those described as "research-based innovation" – and outlines why "learning environment" is the main framing concept for this study. It gives the basic OECD/ILE formulation of "learning environment", to be built on in terms of environments that are particularly innovative, powerful and effective. The chapter ends with a discussion of innovation as exemplified in the project cases.

Introduction

Learning-centredness is the starting point of our study as well as a main conclusion. Learning needs to be put at the centre of the reform and design process, whether at the micro level or when addressing larger developments and system change. It is integral to the first of the key "learning principles" that came out of the previous phase of the Innovative Learning Environments (ILE) study focused on learning research.

We begin this chapter with reiteration of those principles. The chapter explains why "learning environment" is such an important framing concept for the study, building on but extending insights using other concepts and paradigms. It gives the OECD/ILE formulation of "learning environment", and describes how this provides the basic architecture on which to build when the focus is on those environments that are particularly innovative, powerful and effective. Such innovative learning environments are then the subject of the rest of this report; this chapter discusses the ways in which innovation has been understood and operationalised through this international study, together with some extracts from the cases indicating why they are perceived as innovative in their own context.

The ILE learning principles

The close understanding of learning has been embedded in the design of this international study on Innovative Learning Environments. Extensive research reviews on different aspects of learning by prominent experts were synthesised to create seven transversal "principles" to guide the development of learning environments for the 21st century (Dumont et al., 2010). These serve as reference guidelines for the design of all the diverse activities and relationships in learning environments. To be effective in ways confirmed by international research – that can be described as "21st century effectiveness" – the 2010 report concluded that learning environments should:

- Recognise the learners as its core participants, encourage their active engagement, and develop in them an understanding of their own activity as learners ("self-regulation").
- Be founded on the social nature of learning and actively encourage group work and well-organised co-operative learning.
- Have learning professionals who are highly attuned to the learners' motivations and the key role of emotions in achievement.
- Be acutely sensitive to the individual differences among the learners in it, including their prior knowledge.
- Devise programmes that demand hard work and challenge from all without excessive overload.
- Operate with clarity of expectations and deploy assessment strategies consistent with these expectations; there should be strong emphasis on formative feedback to support learning.
- Strongly promote "horizontal connectedness" across areas of knowledge and subjects as well as to the community and the wider world.

The force and relevance of these transversal conclusions or "principles" do not reside in each one taken in isolation from the others. Instead, they provide a demanding framework in which all should be present in some way for a learning environment to be judged truly effective. These principles are integral to the analysis in the current report that is the follow-up

volume in the ILE project series: they are integral to our definition of an "innovative learning environment" and they provide an important lens through which we examine the case studies to see how the different principles are interpreted in practice (Chapter 7).

Building on insights from school effectiveness and school improvement research

This is not the place to provide an overview of the vast school effectiveness and school improvement research, but clearly it offers many insights if, as we argue in the ILE study, there is need to very strongly focus of teaching and learning. It is less obvious that it provides the basis with which to identify or design innovation in which the organisation and promotion of learning are central.

School effectiveness

School effectiveness research confirms the need to focus on processes that touch directly on teaching and learning. This may be expressed in terms of the greater importance of "proximal" as opposed to "distal" factors in influencing achievement, as in:

> Distal factors are less directly associated with the primary process of learning and instruction, examples are: "state and district governance and organisation" and "school demographics, culture, climate, policies and practices". Student characteristics and classroom practices are considered as proximal factors, close to the instructional process. The results of the syntheses show that the more proximal factors have a stronger positive association with educational achievement, as compared to more distal factors. (Scheerens, 2004: 34-35)

Another way of describing this is in terms of the importance of the "classroom level" as the research that generates these findings indicates that "teacher effects" tend to be substantially larger than "school effects". However, to draw the distinction between the "classroom" and "school" levels can suggest that the latter is understood as something residual from the collection of classes and the teaching and learning that take place in each. This residual understanding of what constitutes a "school" risks to reduce appreciation of the holistic organisation of learning and offer implicit encouragement to the familiar situation of loosely connected, parallel learning environments in each class. This runs contrary to the position of the ILE study and of this report.

Such an understanding is itself rejected by some of the most important analyses in the school effectiveness literature. A key recent work of school effectiveness meta-analysis is John Hattie's *Visible Learning* (2009). He reviews evidence relating to 138 different practices that have been studied as influential on learning, and narrows these down to those particular practices and arrangements that have shown especially impressive effect sizes, set at 0.4 of a standard deviation or above. Some of the high impact factors he identifies – providing formative evaluation, micro teaching, teacher clarity, teacher-student relationships, spaced *vs.* mass practice, meta-cognitive strategies, creativity programmes, professional development, problem-solving teaching which are all in the "top 20" with average reported effect sizes over 0.6 of a standard deviation – are being used in many of the innovation sites featured in this study and are consistent with the learning principles outlined above.

Taking individual practices and effects in turn is certainly open to criticism (see e.g. MacBeath, 2012). Hattie himself seeks to pull the different effects together into an over-arching story, in which a key message is the importance of "visible teaching" and "visible learning". This occurs when learning is the explicit goal, when there is feedback

given and sought, and when there are active and passionate people, including teachers, students, and peers, participating in the teaching and learning in collaborative ways. Hattie is also very positive about the quest to innovate, rejecting the conservatism of so much school effectiveness work.

The message of "visible learning" accords closely with this international study and report. It is fundamental to our concept of learning leadership, and the need to transform schools into formative organisations, so that the whole environment is drawing lessons from the learning taking place and constantly redesigning as a consequence. "Visible teaching" assumes that the stifling organisational arrangements of highly fragmented schools – in which each teacher works in relative isolation from others in a series of parallel mini-learning environments, jealously guarding his or her invisibility – needs urgent change.

School improvement

The emphasis on improvement, as future-oriented and about change, comes much nearer to our own emphasis on design and innovation. The "school improvement" literature covers an even broader church than "school effectiveness", as summarised by Hopkins et al. (2011) in their "state of the art review" (Table 1.1). The approach and contents of the chapters in this report relate to many aspects of that wide-ranging body of knowledge, and indeed the ILE project is included explicitly within the "building capacity for learning at the local level" Phase Four of the review carried out by David Hopkins and his colleagues.

Features from all the phases identified by Hopkins et al. find reflection in our work. Organisational culture and adaptability (Phase One) are clearly important aspects of growing and sustaining learning environments. Implementing individual innovations from the bottom up and using action research for environments to be informed about direction and success – as characteristic of Phase Two – are visible in many of the case study examples in this report. Dissatisfaction with celebrating isolated small-scale innovation without strategies to grow it further – one feature of Phase Three in Table 1.1 – is shared with the ILE study as it moves to consider implementation and change and we share a strong focus on leadership (see especially Chapter 5). Building networks and communities of practice – Phase Four of the chronology of school improvement summarised in Table 1.1 – are certainly critical, as stressed in Chapter 5 and 6, though it is less clear that this corresponds

Table 1.1. **Phases of school and system improvement research**

Phase of School and System Improvement	Key Features of each Phase
Phase One – Understanding the organisational culture of the school	• The legacy of the organisational development research • The culture of the school and the problem of change
Phase Two – Action research and individual initiatives	• Teacher research and school review • The OECD International School Improvement Project
Phase Three – Managing change and the emphasis on leadership	• Comprehensive approaches to school reform • Recognising the importance of leadership
Phase Four – Building capacity for learning at the local level	• Professional learning communities and networks • Making the shift from teaching to learning
Phase Five – Towards systemic improvement	• The influence of the knowledge base and impact of international benchmarking studies • Differentiated approaches to school and system reform

Source: Hopkins, D. et al. (2011), "School and System Improvement: State of the art review", www.icsei.net/icsei2011/State_of_the_art/State_of_the_art_Session_C.pdf.

to a level in education systems (district, school board, etc.) lying in between individual institutions, on the one hand, and whole systems, on the other. The very strong focus on learning, the other defining aspect of Phase Four, is clearly a *leitmotiv* for this study, though we have always avoided the idea that this implies having to choose more learning at the expense of less teaching (see also Stoll et al., 2003). International benchmarking (Phase Five) provides important context for the ILE study but this is not our methodology.

There are thus many strands in both "school effectiveness" and "school improvement" that can be drawn on in analysing innovative learning environments. The terms cover such wide and varied fields that there are inevitably many points of contact. Yet there are important reasons why we chose not to cast this work as a further study in these traditions including problems of the connotation of terms.

Such a term is "improvement". Its connotation is with perfecting something that is known and understood – useful advance but limited ambition within well-defined parameters. When the aim is to innovate learning environments, such a connotation is unfortunate.

The problem with "effectiveness" is in how it has been commonly interpreted. Much of the work in this tradition, in the search for measurable links between practices and outcomes, becomes highly reductionist both of the range of practices and of the learning outcomes that should define contemporary education. The problem is less with "effectiveness" *per se* and more with how that has been commonly defined in this research tradition; indeed, the term "21st century effectiveness" is used in this report to refer to success in implementing the learning principles outlined at the beginning of this chapter.

"School" is problematic in the connotation that all relevant learning should take place in places called schools when, more and more, they are catering for only a portion of the learning needs of young people. The term may also be unhelpful when the focus is on learning if it suggests the starting point should be educational institutions rather than the organisation of learning.

Hence, while these research traditions offer many insights that valuably inform and frame this study, it is necessary to extend the focus and to place learning rather than schooling at the core.

Approaches to learning

A natural point of departure with this wider focus is in approaches promoting what are seen as desirable ways of organising learning to achieve what are seen as desirable learning outcomes. This implies both a clear and broad vision of learning outcomes and of processes through which these may be achieved. A "learning approach" may be understood as a patterned set of generalised ingredients and relationships that are promoted as desirable for the learner and the learning outcomes. It defines what the teacher role should be, the content of the learning, pedagogical approaches, ways of grouping learners, educational aims and conceptions of the child, and other key matters, all to be interpreted in specific circumstances according to the general precepts. We have instead preferred "learning environment" because it is both more holistic while being more concrete as a concept, but the two are not mutually exclusive and an approach may offer the philosophical or educational underpinning for a particular environment. Literature analyses conducted for the ILE study have thus included approaches to learning, distinguishing, on the one hand, the approaches of "alternative education" and, on the other, those that can be described as "research-based innovations".

"Alternative" approaches

Anne Sliwka, in her summary of the main approaches to alternative education for the first ILE publication (OECD, 2008), confirms how longstanding some of these have been. She also stresses that their influence may be far more widespread than generally acknowledged, illustrating how fluid is the boundary between "mainstream" and "alternative" in a rapidly-changing world that becomes ever more demanding of the learning taking place within its schools.

> Given the range of features of alternative schools that seem to make sense from a learning sciences perspective, could alternative schools thus serve as models for a broader renewal of mainstream education in the knowledge society? To a certain extent, it seems, alternative schools have already played that role in recent years, because so many of the instructional strategies and assessment techniques they developed have impacted learning and teaching in public school systems across the world. (OECD, 2008: 108)

Montessori schools pursue an educational philosophy and methodology, characterised by a special set of didactic materials, multi-age classrooms, student-chosen work in longer time blocks, a collaborative environment with student mentors, absence of testing and grades, and individual and small-group instruction in academic and social skills. The programme name is not copyrighted and many mainstream schools across the world have now adopted parts of the Montessori methodology. Most schools entirely built on the Montessori methodology and philosophy are, however, organised in international and national networks such as the International Montessori Council or the American Montessori Society.

Waldorf or *Steiner* schools are based on the educational ideas of the philosopher Rudolf Steiner and, with Montessori education, are the predominant form of alternative education around the globe. Waldorf education aims at developing the young into free, moral and whole individuals through integrating practical, artistic and intellectual approaches into the teaching of all subjects. Much more recently, the highly influential work of Howard Gardner on "multiple intelligences" shows just how contemporary such ambitions remain (Gardner, 1983).

Round Square Schools are based on concepts of experiential educational developed by Kurt Hahn, who believed that schools prepare students for life through authentic learning situations as generated by work projects, community services, leadership training, international exchanges and different forms of outdoor exploration and adventure. Round Square Schools emphasise learning through doing with the aim of developing every student academically, physically, culturally and spiritually, through a process of self-confrontation and self-formation within the supportive environment of a school community.

Escuelas Nuevas are alternative schools based on the idea of improved rural and urban basic education for children from low-income families. Started in the mid-1980s, there are now thousands of such schools in Colombia and in other Latin American countries, the Philippines, Vietnam and in Africa. The schools' pedagogy emphasises respect for the rights of children and is based on innovative educational projects involving a range of educational materials that encourage collaborative, participatory and personalised teaching methods, involving the wider community as well as students' families.

The line between these approaches based on philosophies of education and those reviewed next based on research is more blurred than at first sight as *The Nature of Learning* "principles" – strong focus on engagement, regulation, social learning, emotions, individual differentiation, feedback, and holistic connectedness – find a strong echo in the alternative education approaches just described.

Research-based innovative approaches to learning

Scardamalia and Bereiter (OECD, 2008) and van den Broek (OECD, 2012) have looked at approaches to learning that start less with a particular world-view or philosophy and more with particular findings from learning research that have then been extended into model applications. They summarise these approaches into the following categories:

- *Fostering Communities of Learning* (Brown and Campione, 1994) is a constructivist approach in which teachers help students discover important curricular concepts framed by the students' own ideas and questions. Learning routines centre around learning by discovery and prominently feature collaborative learning such as by reciprocal student-student teaching in heterogeneous groups.
- *Learning by design* (Holbrook and Kolodner, 2000; Kolodner et al., 1998) is an inquiry-based science learning programme based on case-based reasoning models that describe how learning activities can be organised in such a way that students make experiences from which they can draw during later problem solving.
- *The Neo-Piagetian central conceptual structures (CCS)* theory (Case et al., 1996) describes developmental changes in children's thinking and the kinds of experience that are necessary to progress to more advanced developmental stages in specific cognitive domains, such as sense for numbers and space.
- *Web-based Inquiry Science Environment (WISE)* is an internet-based adaptive learning environment in which principles of knowledge integration are put into practice during online collaborative science inquiries. The knowledge integration perspective describes how children handle multiple conflicting views of scientific phenomena (Linn, 2006).
- *Cognitive tutors* (Koedinger and Corbett, 2006) are intelligent adaptive software programmes that provide students with scaffolded instruction, feedback and assistance in response to their performance. Performance is analysed by comparing current student behaviour to ACT-R models (Anderson, Corbett, et al., 1995) of typical learning trajectories, which are formulated in terms of successive sub-goals and production rules.
- *Direct Instruction* (Adams and Engelmann, 1996; Watkins and Slocum, 2004) is intended to improve and accelerate learning by means of clear and concise scripted direct instruction by the teacher and high rates of student success during scaffolded practice aimed at active involvement of all students (e.g. signalled choral responding) and a minimum number of errors.
- *Higher Order Thinking Skills (HOTS)* (Pogrow, 2005) is aimed especially at disadvantaged students in which they engage in Socratic dialogues about ideas and strategies to solve game-based problems on the computer. It is designed to provide students with extensive practice in using and verbalising key general thinking skills such as meta-cognition and inference making.
- *Knowledge Building* (Scardamalia, 2002; Scardamalia and Bereiter, 2006) is a constructivist teaching approach that places a strong emphasis on the creation of community knowledge as the driving force behind activities. It frequently uses a software environment in which the users can continuously improve, organise and integrate elements of the group knowledge.

These approaches vary in terms of directedness, emphasis on ideas versus activities, and individual versus community emphasis. All such approaches are based on a model of

learning mechanisms. Some models describe which concepts and strategies students should learn; others focus more on the way in which students acquire concepts and develop skills in response to teaching, as well as on common difficulties during learning and ways to overcome these difficulties. They also vary in terms of their comprehensiveness to offer a framework to embrace all the student learning, or else particular aspects or subjects such as mathematics and science. All can be described as "research-based" yet the research drawn on gives rise to widely different approaches. Just as Hattie found that almost all practices can be found to have a positive association with learning outcomes, research findings can be harnessed in support of a wide variety of differing approaches. Drawing on research can augment the predictability of positive results but it cannot show the "one best way".

Learning environments

The ILE study has preferred "learning environment" as a framing concept, as it reaches more nearly into concrete design and it allows consideration of environments that do not enjoy the underpinnings of a particular philosophical or educational approach (as well as those that do).

There is a general consensus in the learning sciences that the context of learning matters and that learning is situated (Engeström, 2009). Situated theories of learning emphasise the social, collective and contextual nature of learning (Lave and Wenger, 1991). The notion of a learning environment, as a broader setting than a classroom and as the immediate context for learning has gained currency, including in our own work (especially De Corte's review in Dumont et al., 2010). For Engeström (2007), design research shifts the focus from isolated individuals to learning environments or learning ecologies. It becomes necessary to consider how the players and parameters of learning can be designed and redesigned, taking account of existing realities, contexts, learners, and of the perceived impact of the initial learning designs (Akkerman et al., 2011). This is a very similar inspiration to the cases and concepts discussed in the chapters of this report.

A variety of interpretations of "learning environment" can be found (one review is offered by Zitter and Hoeve, 2012; see also Manninen et al., 2007). Commonly, it includes a specific focus on ICT and computer-supported programmes. It may be more encompassing, like the "powerful learning environment" (Könings et al., 2005), that takes intended learning processes and learning goals into account. Goodyear's definition (2001) is that "a learning environment consists of the physical and digital setting in which learners carry out their activities, including all the tools, documents and other artefacts to be found in that setting. Besides the physical and digital setting, it includes the socio-cultural setting for such activities." The problem of many of these definitions for our purposes is that they refer to settings in which the learning of interest takes place – structuring, "housing" and facilitating rather than being inclusive of it – and hence as separate from the learning itself.

Our understanding of a "learning environment" is as an organic, holistic concept that embraces **the learning** taking place as well as the setting: 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). A "learning environment" already defines the immediate context in which the learning takes place. More broadly, instead of context being understood as necessarily external, context can usefully be viewed as integral to the main environment players and variables, most obviously the learners who enter in already with particular social profiles, family experiences, knowledge and expectations, and cultural experience and values. These are all importantly formed in wider family, community and social settings but they are made manifest within the educational setting.

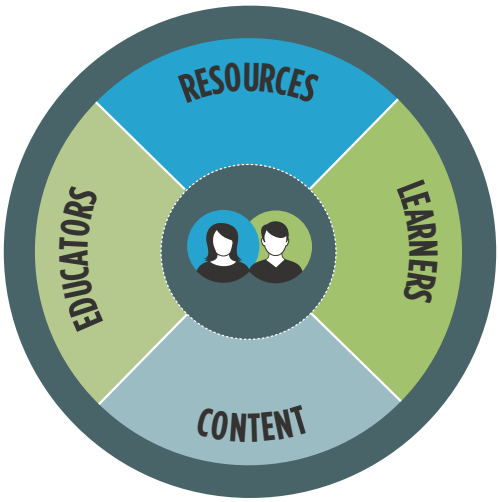
The notion of "environment" also importantly stresses **time** – interplay and interaction take time as does learning that does not happen in instantaneous episodes. The holistic cumulative perspective allows **mix** to come to the fore – the mix of learning approaches, experiences, and settings. This enables avoidance of dualistic simplifications such as the supposed contrasting choice between direct instruction and discovery as if everything will be done in one way or not at all. The organic "eco-system" that is a learning environment means that blended approaches and mixes are understood to be the norm. Endorsement of mixed approaches and repertoires is also supported by the most recent OECD/TALIS report (Vieluf, S., et al. [2012]).

The OECD/ILE framework for "learning environment"

Having determined that a "learning environment" is a holistic eco-system that functions over time and in context and includes the activity and outcomes of learning, the framework through which to understand this needs to be based on a conceptual architecture that does not immediately refer to the "innovative" or "effective" or "powerful". Instead, the basic conceptual framework should be applicable to traditional as well as innovative models, with additional criteria applied to assess how appropriate any particular cases are for 21st century circumstances. Hence, in the basic framework neither the "learner" nor the "learning principles" are placed at the centre as this would assume that all learning environments are innovative, powerful and effective. We come in the final chapter, having reviewed the practices in the different study innovation sites and built on the basic conceptual architecture, to the full ILE specification of an "innovative learning environment".

"School" and "classroom" do not offer a satisfactory architecture for framing learning environments as they are essentially institutional and partial. We have sought another conceptualisation that combines a focus on arrangements for teaching and learning and on the organisation of these arrangements. The familiar triangle – **learners** (who?), **teachers or educators** (with whom?), and **content** (what?) – provides the starting point for defining the environment's core. As learning environments are concrete, **resources** (with what?) are added as a fourth key element. With the focus on learning, such resources are essentially those that can be directly exploited in learning – i.e. physical resources (buildings, facilities, infrastructure) and learning materials. The two resource elements we have focused on most in this report, given their relationship to learning and innovation, are **learning spaces** and **digital resources**. These different core elements are summarised in Figure 1.1.

Figure 1.1. **The elements of the pedagogical core**



Elements do not, however, sit in empty isolation but are brought into relation one with another. So, the second part of the core of learning environments is made up of the relationships and dynamics that combine the elements together in particular ways. These may all be grouped under the general heading of "organisation" and these organisational relationships are further defined in this report under four headings (Figure 1.2):

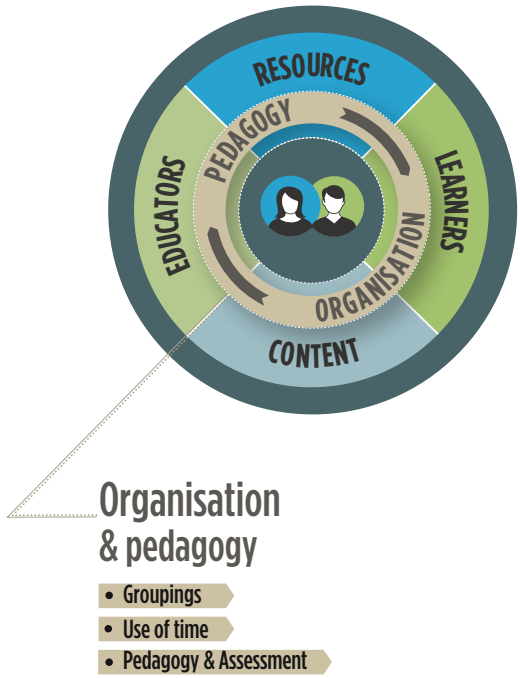
- how learners are grouped
- how teachers/educators are grouped
- how learning is scheduled and timed, and
- pedagogies and assessment practices.

(Space and "learning space" are taken into one of the four elements – resources – rather than as an organisational connector.)

Both the elements and the relationships are important. Learning, for instance, is not an empty activity but always involves content – the content of what is being taught officially, the knowledge and skills prioritised by a system or specific learning environment, what is being learned unofficially. But expectations about what should be learned and to what level will be mere statements of intent if the pedagogies are inadequate or the organisational forms dysfunctional. Both the elements and the relationships are thus needed.

Taken together, this might well be (and has been) termed "the technical core". But as this does not refer specifically to learning or education we have preferred the term "pedagogical core" in order to be more immediately understood. This provides the basic framework for the analysis of learning environments (Chapters 2, 3 and 4).

Figure 1.2. **The organisation and dynamics linking the elements in the pedagogical core**



This basic core is then extended in two ways. First, we assume that there is agency in shaping the environment's direction. In Chapter 5, this agency is discussed through the leadership and organisational strategy, the learning that takes place, and how this is acted on by the learning environment as an organisation. Second, the learning environment may be more open or closed. It may have strong relations with the families of the learners and communities or these may be weak. It may have a highly developed set of partnerships with business, cultural institutions, and/or higher education or not. It may be well connected through networks or be more isolated. The nature of the connections and partnership provide the third component of the ILE definition of learning environments – the diversity of its sources of capacity and the tightness of its boundaries. This is discussed in Chapter 6.

Together, these three layers or circles – with the "pedagogical core" in the middle, the nature of leadership and feedback shaping that core, and the breadth of capacity and connection – offer the basic ILE framework for understanding a "learning environment". To move from a focus on any and all learning environments to those that are specifically innovative, powerful and effective means to look for more in these different layers – how innovative are the elements and dynamics of the core, how much the environment is focused on learning, learners and formative feedback in organisation, and how open it is to partnership and engagement in communities of practice. Overarching all these layers are the ILE learning principles outlined at the beginning of this chapter: these provide the overall criteria regarding the effectiveness and learning-centredness of the learning environment. In Chapter 7, they offer a set of lenses through which to view the practice of the different innovation sites featured in this study.

Innovative practice in the project cases

To focus on learning environments that are "innovative, powerful and effective" underlines that it is not just innovation *per se* that inspired the search for particular learning environments. The need for innovation is compelling but it is not the only way to qualify the sites of special interest to the project. The search was for those that can also be described as "powerful" as they put learning so centrally at the heart of their activities and ethos. They should be "effective" in the broad sense of meeting the learning principles outlined at the beginning of this chapter; Chapter 7 shows how well the ILE case studies succeed in that ambition.

The cases submitted by the participating systems (plus a small number of individual submissions) were chosen based on an understanding of "innovation" in their own context. Apart from insisting that the learners involved should primarily be young people (approximately aged 3 to 19 or some band within that), that the cases represent specific whole learning environments rather than programmes or particular courses, and that they are not so exclusive as to have no relevance for others, the selection instructions left the nature and extent of innovation open to interpretation: **an intentional departure from the traditional approach of the large body of general or vocational education in its own context – i.e. it is deliberately innovative**.

To this we added a further filter where, in our view, the case did not appear to be innovative enough to be of interest to the international audience (though such a judgement was exercised sparingly). Having thus compiled the "Universe" of innovative learning environments, those further selected to the "Inventory" to be researched as case studies and provide the main input to this report were the approximate one third – there are 40 case studies in all (see Annex A) – that stood out as being especially inspiring and innovative.

What counts as innovation is thus determined by local circumstance and judgement. The project avoided the methodological route of identifying "innovation" in a limited number of specific practices that could be defined in advance and searched for internationally. For one thing, this goes against the holistic understanding of a "learning environment" as defined by the complex chemistry of all its elements, not specific single features. To limit innovation to a small set of international universal practices was rejected as a starting point by the ILE project as both contrary to the concept of "learning environment" and to that of "innovation". So rejecting this "universal practice" definition brings with it an inevitable variety and diversity, but this, in our view, is inherent in the nature of innovation and the context-specific nature of learning design. To this theoretical argument rejecting innovation as sets of universal specific practices, there were practical reasons for relying on local knowledge and judgement: how otherwise to find interesting innovations in different locations across the world, especially innovations that have not already been amply documented?

With this approach comes the concomitant risk that what is seen in some contexts as innovative might appear to some readers as unexceptional. That was a risk that the project was prepared to run. The focus on holistic arrangements had already meant that some very specific innovative practices covering only a small part of the learners' experience (a particularly innovative course or teacher, for instance) had been ruled out. Moreover, by choosing already-implemented cases with an established track record, these were inevitably routinised to a degree. And, as a D&R (development and research) project (Bentley and Gillinson, 2007) rather than a pure research exercise, it was important to engage systems and cases that were meaningfully innovative in their own context. For all these reasons, the understanding of "innovative" was primarily a matter of local judgement.

Innovative in their own context

There are numerous ways in which the examples analysed in this report are considered innovative in their own context. 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.

> *Europaschule Linz (Austria)* is innovative within the Austrian school system as its approach to learning is highly individualised.
>
> The individualised academic work of students usually prevails in the Spanish schools. *CEIP Andalucía, Seville (Spain)* innovates by promoting collaborative and co-operative learning of students through interactive groups, project work, workshops, dynamics and other activities. It is also frequent to find several adults working together in the same class, which again is innovative practice in the Spanish education system, where most teachers work according to a strict internal hierarchy and as "islands" in the classroom.
>
> The *Jenaplan-Schule, Jena (Thuringia, Germany)* organises school subjects, teaching time, and learning groups differently from the Thuringian system, as well as the German education system in general. Instead of structuring content in terms of subjects, organising by grade year and short hour units of 45 minutes, there are open student-oriented learning situations in mixed-age learner groups which also include children with special needs.

Sometimes the innovative nature of the learning environment is revealed by something distinctive that in itself may not seem 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)*.

It may be the students themselves who recognise how distinctive are their learning experiences, as with this student in the *ImPULS-Schule Schmiedefeld (Thuringia, Germany)*:

> I like that we do not have the usual lessons, in which the teacher stands in front of the pupils and gives direct instructions. We can work our themes out and plan our time autonomously. Therefore, you can learn to organise yourself. (Learner, 7th grade)

Or as simply put by this *Australian Science and Mathematics School (South Australia, Australia)* student:

> It's a very unique environment. (Year 10/11 student).

Two final extracts raise additional issues regarding the nature of innovation. The first underlines that the 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 how the different practices and approaches are put together into the whole. This again is to underscore the value of the holistic approach that is fundamental to our 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 combination of the orientation on specific learner's abilities and the use of proven elements are focused on to gain overall novel changes.
>
> > We are not the only ones who are working with Moodle. We are not the only ones who have a lot of free work phases. We are not the only ones that work mostly in social learning groups. I think the concentration of the mixture is the interesting aspect. (Teacher)

The British Columbia researchers make a related but distinct point about the specificity of their particular innovation: they propose that their work should not be judged as something unique for that would mean it would offer little of value for others to try something similar. Instead, they stress the replicability of the basic approach even if contextual details will always be different:

> Although there are some unique features of the *Saturna Ecological Education Centre (British Columbia, Canada)* programme, there are many parts that are replicable. The pedagogical approaches, using community mentorships, learning partnerships across age ranges, sustainable living skills, community service projects, Independent Directed Studies, and peer teaching can all be done by other teachers in other places.

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.

Concluding summary

The chapter reiterated the importance of the "learning principles" that emerged from the learning research phase of the ILE project and stand as the guidelines towards which all learning environments should be striving. The seven principles are also the lenses through which the innovative cases are examined in Chapter 7 and provide a key element of the overall definition of innovative learning environments offered by the OECD work summarised in Chapter 8.

The chapter reviews insights from both the school effectiveness and school improvement research traditions and observes how some of the important findings from these are in tune with directions taken in this report. At the same time, they give rise to interpretations and connotations – including through such terms as "school", "improvement" and "effectiveness" – that are not helpful when the focus is on designing learning environments for 21st century learners and communities.

To extend the focus more directly on learning, rather than schooling, two additional framing concepts are considered: "learning approach" and "learning environment". Both are relevant to the ILE work, and the chapter reviews two sets of learning approaches: those associated with alternative schooling and those described as "research-based innovation". Nevertheless, "learning environment" is the main framing concept for the study. The chapter gives the OECD/ILE formulation of this concept, and presents the basic architecture developed through the ILE study whether such environments are innovative or not. It also indicates how this basic architecture will be built on when the focus is on those environments that are particularly innovative, powerful and effective.

The chapter ends with a discussion of innovation in the learning environments that feature in this study. The selection of cases and in the ILE study in general assume that innovation depends critically on context rather than being summarised in a small number of supposedly innovative practices no matter where they are found or how they are applied. The distinctiveness and innovation of the case study sites are then exemplified with extracts from the cases themselves.

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www.oecd.org/edu/ceri/innovativecases.htm.

Chapter 2

The learners in the case study learning environments

In the innovative cases studied, some are set in affluent contexts but many are not, whether because they have mixed student profiles or because they are in disadvantaged communities. Some are selective in the sense of choosing those with particular abilities (e.g. interest in science). More often in this report, the entry criteria are set to include those that otherwise may be poorly catered for elsewhere – such as those with special needs or who are otherwise at risk. The learning environment may also exercise choice over such matters as the age of the students, though this may be set by systems according to established cycles. Several of the cases in our study have moved towards bringing together learners of different ages, in part to avoid disruption that can occur especially in the primary-to-secondary transition. There are many examples where parents are also learners.

Introduction

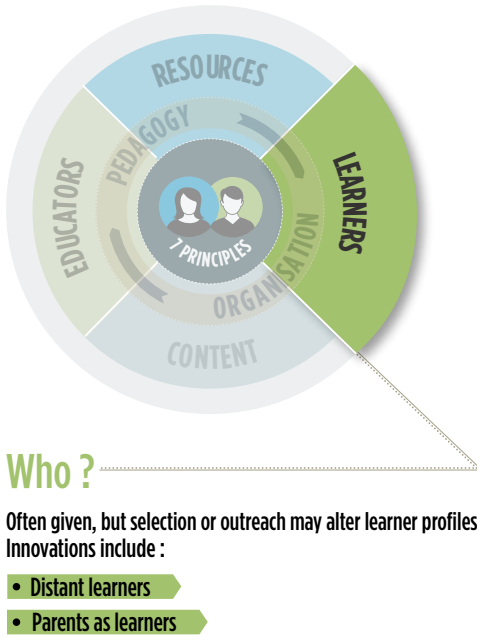
We begin the presentation of our learning environment framework with profiles of the learners featuring in our study. This is to address who are the "learners" in the very broad terms of their socio-demographic characteristics, rather than the characteristics personal to each individual that only the attentive individual teacher or parent might get to know. To begin with learners is a reminder that no learning takes place without the learner, whatever the other ingredients and stimuli. What learners bring with them to learning – their social and cultural capital, their existing knowledge, interest, motivation, self-efficacy beliefs, and development – critically influence everything that the learning environment might then seek to do. The key roles of context and families are well discussed in the preceding ILE (Innovative Learning Environments) volume on *The Nature of Learning* (2010), especially in the contributions by Erik De Corte (2010) and by Barbara Schneider and her colleagues (2010) on context and the role of families, respectively.

To remember this basic fact is not to despair of the challenge facing education – the challenge that so much of what takes within it is powerfully shaped by factors coming from outside it. Rather, like the reality that daily faces the innovators featured in the sites presented in this report, the social, cultural and economic environments are a constant and powerful presence that shape all that takes place.

Learners in the ILE study

This chapter brings into relief the range of the learner communities that the ILE project innovative cases are catering to. Even this is, of course, only a small sample of the myriad variety of learners in different settings across the OECD countries and beyond. The purpose is to bring to the fore the very widely differing contexts and circumstances in which learning and schooling takes place in terms of the learners who come in through the doors each day.

Figure 2.1. **Learners in the pedagogical core**



Our own project design placed certain limits on the range of learners, especially in age terms. We required that the learning environments should serve the learning needs of children and adolescents (approximately aged 3 to 19 or some band within that), whether exclusively or in mixed-age environments. By so doing, we were excluding adult education and workplace learning settings that, however interesting and important, define broader fields outside our scope. Nevertheless, a number of the case study learning environments deliberately include older adults, including some parental classes alongside those aimed at the main learner group of young people.

We also specified that none of the submitted cases should be so highly resourced that they would have no relevance for any but the very wealthy. While a small number of the case studies are private schools, the actual per-student costs may not be prohibitively high compared with the cost of educating a public school student in the same system. Hence, they also meet our criterion of general relevance as a model (which was not set so as to exclude private education but to rule out learning environments that cost excessive amounts).

Different socio-economic profiles of the ILE communities

There may be a temptation to suppose that innovating learning is a luxury for schools and communities in affluent suburbs in affluent countries. Certainly some of the case studies refer to situations like these:

> *Mevo'ot HaNegev (Israel)* serves middle to high socio-economic populations, whose children come from the rural municipality communities (50%), from the Bedouin population in the area (5%) and from urban settlements (45%).
>
> Around *Mordialloc College (Victoria, Australia)*, the area is fast becoming part of the affluent spread of largely white middle-class families clustered around the coastal Nepean Highway; it has red brick buildings of the 1920s set in beautiful gardens.
>
> In the *Centre for Studies on Design at Monterrey (CEDIM) (Nuevo León, Mexico),* students range from 17 to 25 years-old, are 70% female, and the majority (65%) are from the middle-high socio-economic level, with the remaining 35% divided between 20% upper class and the 15% in the middle-middle class.

Many others are mixed profile, combining the well-off and the less well-off as in countless schools. But many of the sites analysed in this study are in areas of social disadvantage, in which the powerful forces and problems encountered have been met by the energy, commitment and creativity of the innovators. At the same time, we rejected an exclusive focus on disadvantage as this would have cast the results as relevant only to those in the same circumstances whereas we were aiming for much wider relevance.

The following are examples in our study serving disadvantaged communities.

> *The Education for Democratic Citizenship Programme, Colegio Guadalupe (Nuevo León, Mexico),* is one of 120 Mexican low-income population schools adopting the programme; students participating come from broken families and disintegrated and violent communities.
>
> *Instituto Agrícola Pascual Baburizza (Chile)* is an agricultural school with Technical and Vocational Education (VET) primarily comprising students from rural areas and disadvantaged economic backgrounds. Most of the students come from rural sectors with a difficult family economic situation, from the north and the central regions of Chile.

> *Netzahualcoyotl* is the only school in *Los Coyotes (Conafe, Mexico)*, a rural community located in the Mexican state of Hidalgo, home to approximately forty families. Its seventeen students live no further than a ten minute walk from it. The community stands next to a paved road that connects it to the rest of the state. There is no sewage or drinking water pipes but the school and some of the houses have plastic hoses that bring relatively clean, though undrinkable, water to be used for basics. Electricity is scarce, not enough to plug in a refrigerator, though all of the houses have light bulbs.

A graphic illustration of the lack of stimulus and cultural capital in this community comes from the notebook of the Itinerant Pedagogical Adviser (API), Ramiro:

> He then asks them if they can tell him about some of the things that have happened in Los Coyotes lately. Children talk about what has impressed them the most, almost the only thing they talk about are the car accidents that have occurred in the road that can be seen from their classroom's window. (*Itinerant Pedagogical Advisor (API), Conafe, Mexico*)

Many of the learners from disadvantaged communities are in archetypal poor urban settings:

> *Colegio Karol Cardenal de Cracovia (Chile)* is located in a very poor area with high rates of unemployment and drug problems. Inside the commune of Pedro Aguirre Cerda, it is located in one of the poorest zones of Santiago, called José María Caro.
>
> *Europäische Volksschule Dr. Leopold Zechner (Austria)* is located in Vienna's 15th district, close to the Guertel. This area has a large population with a migration background whose language of origin is not German. The 15th district is an area with old buildings with small substandard homes. The typical inhabitants in the 15th district are "*Gastarbeiter*" (guest workers) and their families, especially from Turkey. Foreigners make up a fifth of Vienna's population overall (2008); in the 15th district of Vienna this rises to nearly a third, and almost half (46%) when all with a migration background are counted. Many do not have Austrian citizenship.
>
> *Yuille Park P-8 Community College (Victoria, Australia)* is located in one of the most disadvantaged communities in Victoria. Situated in a neighbourhood of public housing in Wendouree West on the outskirts of Ballarat, the vast majority of parents are unemployed and many families have lived in the neighbourhood for two or three generations. Others are itinerant. The community and educational liaison officer, who worked on the initial project, explains that "things were desperate, something had to happen".
>
> The *Polígono Sur* measures almost 145 hectares in the South of Seville, with a high population density. It is composed of six areas, two of which are catchment areas for the school: the Martínez Montañés and the Murillo areas. 90% of the population of these two areas belong to the Gypsy ethnic group. As the principal at *CEIP Andalucía, Seville (Spain)* points out referring to a recent study:
>
>> The *Polígono Sur* is one the biggest pockets of poverty in both Spain and Europe. Some of its defining features are: the reproduction of poverty, a Gypsy majority, conflict, coexistence problems among neighbours, lack of social skills, lack of security, families at risk, high drug use and dealing, insufficient hygiene and health awareness, high youth and adult unemployment and precarious and low-skilled employment, black economy, low educational attainment, high school absenteeism, significant youth

and adult illiteracy levels, low involvement of parents in school life and the education of their children, administrative abandonment, urban barriers and closing of educational installations due to a lack of response and to safety problems.

Courtenay Gardens Primary School (Victoria, Australia) has an Index of Community Socio-Educational Advantage (ICSEA) ranking of 938, identifying 92 % of students as coming from homes within the bottom quarter of the socio-economic spectrum.

Often, high levels of cultural and ethnic diversity goes hand-in-hand with disadvantage and high poverty incidence, though not necessarily. Several of the cases specify that diversity characterises their learners:

Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China) is located at a public housing estate, where the students are mainly from families with low socio-economic status. Some of them are new immigrants of Mainland China while some are from single-parent families and some are from South Asian countries.

Miwon Elementary School (Korea) is in a rural area outside of Seoul with a growing number of children with an immigrant background. Miwon Elementary School is a small school located in a rural agricultural and industrial area: Gapyeong-gun, Gyeonggi-do. It is composed essentially of lower income and lower social class families, with a high ratio of multicultural background families. There has been an increase in international marriages due to the influx of foreign workers to nearby factories. The number of students from non-Korean backgrounds is rapidly rising: from 14% in 2005 to nearly 40% in 2007, and 50% by 2010.

The *Elementary Connected Classrooms (British Columbia, Canada)* project focuses on students in grades 4-6, ranging in age from 9-12; over half of the students are of First Nations ancestry.

Combining different learner ages

The examples brought together in the ILE study correspond in some cases to primary school age, in others secondary age, with a smaller number bringing together younger and older or a wide age range:

A key moment in the history of *Instituto Escuela Jacint Verdaguer (Spain)* came in 2005 when the Teachers' Assembly of the pre-primary and primary school decided by majority, with the support of the Parents' Association, to become an integrated school for children between the ages of 3 and 16; that is, all the years of compulsory schooling in Spain and the second cycle of pre-primary education (non-compulsory). They therefore become one of the few public integrated schools of the country.

Valby Oppvenkstsenter (Norway) combines an early development day-care centre and a primary school for children aged 1 to 13.

Jenaplan-Schule (Thuringia, Germany) is organised as a comprehensive school for all children independently from their social background, mental or behavioural disabilities. By the integration of its own kindergarten and its own primary school, it combines the different phases of institutionalised education from early childhood up to adolescence.

Stiftung Deutsche Landerziehungsheime Hermann-Lietz Schule Haubinda (Thuringia, Germany) combines primary and secondary school, and technical college and so caters for an age range of 6 to 20 years of age.

There are thus specific examples in the cases of bringing a wide learner age range together, and sometimes this takes place within the same classroom:

In the *One-room School, Gesamtschule Lindental (Switzerland)* the youngest pupil is 7 years old, the oldest 16. The age distribution is fairly balanced but the sex ratio is clearly less balanced with 6 girls and 14 boys.

The researchers add that a noteworthy feature of the Lindental School is the fact that 14 out of the 20 pupils go to school together with their siblings, thereby re-creating some of the characteristics of home schooling.

Selecting certain learners

The learning environments featured in this study differ in terms of whether they exercise a degree of choice over which learners are admitted. For some, as in countless schools, the learners are largely given and defined by community location. Others exercise some control over the entry of their learner populations, whether control by selection so that only certain profiles of learners are admitted or control by opening up to learners who may have been rejected by others.

The *Australian Science and Mathematics School (South Australia, Australia)* is a specialist senior secondary school (grades 10 to 12) on the campus of Flinders University, wherein students select the school because of their science and mathematics interests.

John Monash Science School (Victoria, Australia) is unusual in a number of ways. First, it is one of only five selective-entry government schools in Victoria. It differs from the other selective-entry schools because it is also specialist. So, selection is based not only on academic ability, but also, in the words of the schools own documentation, on the "applicant's passion and aptitude for science, capacity for logical and numerical reasoning, and mathematical ability".

Selectivity does not necessarily mean targeting those with particular talents such as shown science ability; several of the cases instead admit those who are particularly vulnerable to failure and exclusion:

The *Learning Together Murray Bridge programme (South Australia, Australia)* was devised to address the on-going and significant challenge of engaging those in the community who are traditionally "hard to reach" or educationally excluded.

The *Life Skills Center of Trumbull County (Ohio, United States)* is where high school students at risk of dropping out are supported by a team of teachers, intervention specialists and social workers.

NETschool (Victoria, Australia) was founded in order to re-engage young people (aged 15-20) in work or study and offers a highly innovative environment designed to provide positive learning experiences for "at risk" students.

The Portuguese distance learning initiative *Escola Móvel (Portugal)* targeted precisely the marginal groups of learners who are "on the move" by giving its learners access to a virtual, national-curriculum-oriented learning environment via on-line sessions. It aimed originally at children from circus families who were

changing schools very frequently (30 times and more per year), as well as at other students who have difficulties to regularly attend classes and are therefore likely to drop out of school, such as teenage mothers.

Dobbantó (Springboard) classes in Hungary are heterogeneous with regard to age, cultural and ethnic background and special educational needs. The age of programme participants varies from 15 to 25, and cognitive skills range from mild mental handicaps to fully healthy, and knowledge levels vary as well with some only completing five grades and others up to nine. In some schools, the majority of Dobbantó students have a difficult family background or live in state care, while in some others, the Dobbantó class offered a solution for the education of the problematic children of better-off families.

Parents as learners

While the OECD/ILE study set the requirement that its example innovations had to include younger learners (children and/or adolescents), it was very open to examples where older adults are welcomed alongside the younger learners. Many of them take steps to involve and connect parents, as will be discussed in Chapter 6. In some cases, however, they also welcome the parents as learners – whether in order to enable them to better support their children's learning or to build a collective sense of community around the learning environment, and often both.

There is an on-going transformation of the definition of "learner" in *Vigra Primary School (Norway)*. Parent classes reflect an increasing recognition of the importance of connections with the learners' families and social networks. They express lifelong learning by showing that the concept of a "learner" is not limited to children but includes parents (and adults in general).

At *CEIP Andalucía, Seville (Spain)*, the "Mothers' School" is where a dressmaking workshop is combined with a literary discussion. Both teachers and volunteers take part. A group of mothers gather together to learn about an activity which is useful for them and for the school, and share experiences, discuss and think about the literature topic as well as their everyday lives.

Miwon Elementary School (Korea) has introduced a range of different innovations, including Korean language classes for parents and cultural awareness programmes for all stakeholders. There are activities for parents from foreign origin and Korean families and hosted meetings, called "*ShaRangNhaNuhm*", where the parents were provided with life-long learning programmes and offered opportunities for teaching their own languages to students.

In *Learning Together Murray Bridge Programme (South Australia, Australia)*, the social landscape is one of significant inequity and the programme focuses on both children and adults, and often in combination. Parents/carers, some as young as 14 years of age, and their young children are brought together to learn within the same space. The curriculum is crafted around involving parents in their children's learning. *Learning Together* was devised to engage those in the community who are traditionally "hard to reach" or educationally excluded.

Consejo Nacional de Alianzas Educativas, National Council for Community Education Partnerships (Nuevo León, Mexico) has a programme called "Madres Comprometidas" (Committed Mothers) that uses empowerment and entrepreneurship training strategies to foster women's self-esteem and start small community businesses,

generating sufficient income to prevent families from taking their children out of school and engaging mothers and families in the educational lives of their children. There is increasing participation of mothers in the educational activities of the *Centro de Atención Integral al Adolescente* (Center of Comprehensive Care for Adolescents, CAIA), starting with 30 and now reaching 200.

In *Escuela Celestin Freinet* (*Chile)* parents are also present, and attend classes. This has been helpful to generate a sense of trust and links which coincided positively in students' advances.

A specific type of German learning was offered in *Europäische Volksschule Dr. Leopold Zechner (Austria)*, in which the mainly Turkish-speaking mothers got the option of sitting with their children in the morning to learn German together with them, which worked better than the afternoon German course offered by the City of Vienna agencies. Europäische Volksschule Dr. Leopold Zechner used the situation to bring parents into closer contact to the school and the educational life of their children.

Special needs

The innovative learning environments that were selected by the participating systems stand out in their success in innovating their organisation of learning with success in terms of achievement, wider educational outcomes, the engagement of young people, and sustainability. Yet, as with affluence and disadvantage, this is not because they have selected out learners with difficulties in order to focus on the high-achievers. In some cases, they have been more open and integrating for learners with special needs than the majority of provision in that system and the result is a heterogeneous learner body. A number of the innovative approaches to learning have been designed precisely to address the needs of those who struggle or reject the mainstream, for a complex range of reasons.

The *REOSCH (Bern, Switzerlad)* has a special, compensatory function within the educational system of Switzerland in that it is mainly attended by young people whose learning motivation, achievement, and general school experience have been unsatisfactory. Some pupils transfer to the REOSCH because of problematic social behaviour. Approximately two thirds of the students are male.

Up to 70 per cent of *NETschool (Victoria, Australia)* students are in lower income groups and many live in difficult familial circumstances. Their circumstances are complex and various but some of the major factors affecting learners at NETschool are pregnancy (22 per cent in 2010), mental health problems (45 per cent), and disengagement with schooling or behavioural issues (25 per cent).

Kirchberg Primary School (Austria) includes a large population of children with special needs and is oriented towards principles of Freinet education, emphasising children's expression of their views, and responsiveness to students' questions and needs.

The *New Innovators for the World, Social Learning Project, College of the Home Mission Society in Huvilakatu (Finland)* seeks to create a safe and pleasant atmosphere for its students in need of special support and lets them learn in a homelike environment. Some of the young people have great difficulties in their own lives, especially with family affairs. They have maladjustment to the normal basic education. Some learners are also socially excluded and/or taken into care and placed in foster homes.

Special needs and heterogeneity come together in the learning environment that has been created in an Australian hospital for children.

> The *Royal Children's Hospital (RCH) Education Institute (Australia)* offers an individual learning programme to children and young people who often stay for extended periods in the hospital and/or are repeatedly admitted. For many children, extended periods of hospitalisation, repeat admissions and/or frequent visits to the Royal Children's Hospital span multiple stages of learning and development. Children also come into the hospital with a wide range of experiences, skills and knowledge; hospital teachers cannot assume any shared background between patients with regard to their prior learning experiences.

Learners coming together from a distance

In some of the cases featured in the ILE study, the learners do not belong to a single geographical community but are joined by the fact that they are geographically remote from each other – learners coming together from a distance. One example can be seen in British Columbia, Canada:

> With *Elementary Connected Classrooms (British Columbia, Canada)* three mixed-age classrooms (years 4 to 7) from three elementary schools participate in video-conferencing, online collaborative work, on-line literature circles, and exchange of student-created multi-media content. It is intended to dissolve geographical boundaries and to meet the needs of declining enrolment and rural isolation.

Another example from Australia caters to older learners as well:

> The *Open Access College (South Australia, Australia)* is a government distance education institution offering all levels of school education to learners who are unable to attend a local school or access the curriculum in their own school. Learning at Open Access College is unlike traditional schooling in the sense that it primarily occurs at a distance, rather than face to face. Learners have contact during six half-hour periods weekly to engage in the curriculum, and an extra half-hour contact period for "home group" activities related to student organisation and well-being. Contact is made in groups of around 8 students studying at Year 7-9 level via Centra (online learning platform). This platform supports voice, text chat, PowerPoint presentations, the use of external applications, linking with websites, teacher demonstration and whiteboard, as well as opportunities for breakout room discussion.

Hence, in these examples the learners are not defined by membership of a particular community, affluent or poor, or displaying particular talents or disabilities, but they share the common situation of living apart or in remote areas and are brought together in ways that depend on the power and potential of communication technologies.

Concluding summary

In the ILE concept of a "learning environment", context and background are understood as far as possible as integral to it and embedded within it, rather than a surrounding location: one of the main ways in which wider context enters is through the social and cultural capital of the learners themselves. Research has confirmed repeatedly the key role of social and educational background in shaping the learning that takes place – more than any other set of factors.

In the cases studied, some are set in affluent contexts or have mixed student profiles whereas others are in disadvantaged communities. It was a deliberate choice of the project to avoid selecting only cases that exclusively focus on the disadvantaged in order to avoid the conclusion that our study has no relevance to anyone else.

The learning environment can change learner profiles by selecting some learners in or out. Some of the cases in our study are selective in the sense of choosing those with particular abilities (e.g. interest in science). More often, the entry criteria are set to include those that otherwise may be poorly catered for elsewhere – such as those with special needs or are otherwise at risk.

The learning environment may also exercise choice over such matters as the age of the students, though this may be set by systems according to established cycles. Several of the innovative cases have moved towards bringing together learners of different ages, in part to avoid the disruptive transitions that can occur especially in the primary-to-secondary transition. The cases in our study include examples where parents are also learners just as there are examples where learners become educators, as will be discussed in Chapter 3. Another way in which the standard schooling relationships get redefined is when the learners are not all in one place – a flexibility that is integral to the "anytime, anywhere" maxim.

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Chapter 3

Innovating the elements of the pedagogical core

This chapter looks at how the Innovative Learning Environments have innovated the other basic ingredients in the pedagogical core besides learners: rethinking the content (the what?), the resources (with what?), and the teachers (with whom?) offers many ways of changing learning environments, as richly illustrated in this chapter. Innovations of the content of learning is looked at through two different lenses: first, many of the featured ILEs have sought deliberately to develop 21st century competences; second, there are many examples of innovating specific knowledge domains or subject areas such as interdisciplinary programmes, languages and multi-cultural focus, and sustainability. The innovations in resources refer to digital resources and technology, on the one hand, and facilities, infrastructure and learning spaces, on the other. The innovation can be extended by bringing in different experts, adults or peers to work with or act as teachers as is routine in many of the study innovative cases.

Introduction

This chapter deals with innovations in the basic ingredients in the pedagogical core; these elements are **content**, **resources** and **educators**. Changing the basic ingredients of the pedagogical core is not by itself to change the nature of the learning environment and of outcomes for this requires those elements to be used effectively and innovatively. Yet while not sufficient for innovative change, addressing the content (the what?), the resources (with what?), and the educators (with whom?) offers many ways of changing learning environments. This is the subject of this chapter, richly illustrated by the approaches taken by the cases in our study.

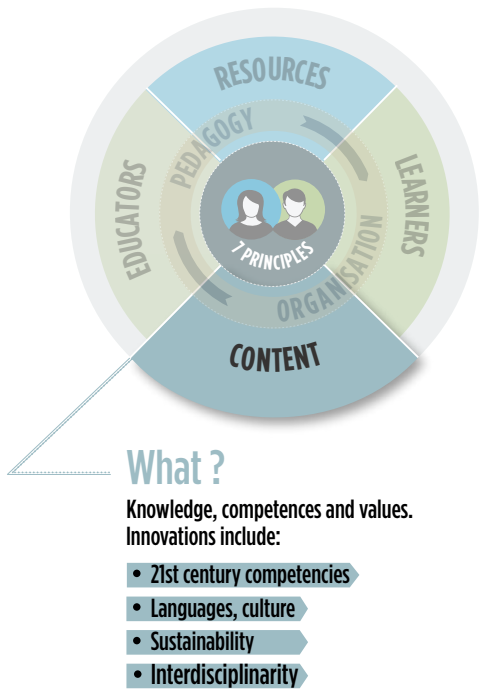
Rethinking the content of learning

Innovations of the content of learning are about addressing the knowledge, competences, abilities and values that are developed in the learning environment. The approaches taken to changing content by the project cases are looked at through two different lenses: deliberately developing 21st century competences, including social learning, on the one hand, and changing content in terms of specific knowledge domains or subject areas that are given privileged status, on the other. In conclusion of this section, the commentaries made by the cases suggest that their innovations can be implemented within the curriculum structures in place in their own particular systems, albeit often going beyond what is actually required.

21st century competences

There is now considerable attention given to the so-called "21st century competences" (Ananiadou and Claro, 2009; OECD, 2012; Rychen and Salganik, 2003). What precisely these are understood to cover varies, and the term serves as a shorthand for a range

Figure 3.1. **Innovating content in learning environments**



of transversal capacities and abilities that extend beyond the reproduction of facts and knowledge. It is arguable whether there is anything specifically "21st century" about them, no matter how useful the shorthand – they define, after all, abilities that were just as relevant in the 20th century. What is more, the century is now well over a decade old. So long as it remains in currency, however, the value of the term is to focus on generic abilities that may be among the hardest to foster and especially actually to teach, and to ask whether enough is being done to promote them in current education systems.

21st century competences generally refer to such skills as the ability to apply flexibly meaningfully-learned, well-integrated knowledge in different situations and the ability to cope with the social, communication, and emotional demands of rapidly-changing environments. Creativity, collaboration, and an entrepreneurial approach feature prominently, as does digital literacy. In *The Nature of Learning: Using Research to Inspire Practice* Erik De Corte (2010) addressed an over-arching objective of learning in contemporary education in terms of "adaptive competence" which he defines as: "the ability to apply meaningfully-learned knowledge and skills flexibly and creatively in different situations. This is opposed to "routine expertise", i.e. being able to complete typical school tasks quickly and accurately but without understanding." (De Corte, 2010: 45). "Adaptive competence" leaves it open as to the actual knowledge and content in question.

Many of the case study innovations see among their primary objectives to equip learners with so-called "21st century competences": to enable their learners to develop attitudes and values to actively participate in society and successfully choose and pursue a career and deal proactively with change.

> The motto at the *Institut Beatenberg (Bern, Switzerland)* is "fit for life". This fitness is achieved by the interplay of sustainable and ready-to-use knowledge, skills and attitudes, including social skills ("*Sozialkompetenz*") and the ability to assume responsibility for one's own learning and working. Lifelong learning, an eagerness to learn, and a high level of motivation are essential for success, and learning skills are thus in high demand and must be developed at school.
>
> At *Jenaplan-Schule (Thuringia, Germany)*, subjects are selected to enable students to tap into their creative abilities, to make decisions by themselves, and to present the main results of their learning process to others.
>
> The learning is arranged at *ImPULS-Schule Schmiedefeld (Thuringia, Germany)* with the objective to foster social, personal and methodological competencies, in addition to the expertise in a subject.
>
> During the first few months of the 5th grade at *Europaschule Linz* (*Austria)* the focus is on learning, communication, organisational and presentation techniques, as well as on gathering and providing information.
>
> One subject of interest at *John Monash Science School (Victoria, Australia)* and highly relevant to 21st century competence is Creative Studies, which explores the nexus of problem-solving, creativity, technology and nature.

The social and economic developments in a changing global world require a special focus on methodological competencies according to the *Lobdeburgschule (Thuringia, Germany)* which they summarise as the "methodological curriculum" (see Table 3.1).

In promoting 21st century competences, the *Institut Beatenberg (Bern, Switzerland)*, the *ImPULS-Schule (Thuringia, Germany)* and the *Lobdeburgschule (Thuringia, Germany)* are among those that have taken the similar approach of developing "skills or competence

Table 3.1. **Methodological curriculum at the Lobdeburgschule**

5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	10th Grade
Organising a subject folder/notebook	Group work	Working on operators in tasks	Role play	Arguing	Exercising and improving all methods
5-step reading method	Scientific literacy	Extracting from texts	Interpreting texts	Criteria for pupil's presentations	
Working on operators in tasks	Brainstorming	Arguing	Interviewing	Essay writing	
Gathering information from texts	Mind maps	Criteria for pupil's presentations	Interpreting Statistical graphs	Arguing	
Interpreting a picture	Poster design	Discovering	Role play	Criteria for pupil's presentations	
Pupil´s presentation	Creative play	Classroom breaks with physical activity		Essay writing	
Learning how to learn	Gathering, analysing and summarising material	Working on operators in tasks			

Source: OECD (2012) Inventory case study "Lobdeburg School of Jena", www.oecd.org/edu/ceri/LobdeburgSchoolJena.pdf (accessed 1 July 2013).

matrices" with a list of skills in a subject or field on one axis and a scale of proficiency on the other. These matrices support both students and teachers in setting goals, and in enabling them to reflect on and review achievements and progress; in all, they are seen as a means of enhancing learner self-efficacy.

> The skills matrices (or "competence matrices", "*Kompetenzraster*") used in the *Institut Beatenberg,* are grids with a list of skills in a subject or field on one axis and a scale of proficiency on the other. Each cell contains a description of what a learner is supposed to be able to do at the respective level. In every subject the pupils can determine their skills level on the corresponding skills matrix.
>
> > The skills matrix is a kind of skills map. The children move from different places to the same or to different destinations. But everyone moves within the same framework: the learning coaches, the children, the parents. By this we create transparency and make the whole thing somehow manageable. (Principal)
>
> Skills matrices have even been created for learning skills ("learning to learn", "*Lernkompetenz*", including: familiarising oneself with a new topic, developing and formulating aims, gathering and assessing information, overcoming learning problems and difficulties, and assessing the obtained results), and personal skills ("*Selbstkompetenz*", including: self-control, reliability, commitment, confidence and mindfulness).

The strong focus on non-fictional writing at one of the ILE cases, *Courtenay Gardens Primary School (Victoria, Australia)*, might be seen as something highly traditional or in the 21st century perspective. Writing has become a more central part of many jobs and activities, especially with universal keyboard or touchpad use; the strong focus on non-fiction writing as a process may thus argue for it to be seen alongside these other transversal competences as well as regarded as a traditional skill.

> *Courtenay Gardens Primary School* has made central a process-writing approach focused on students and what they write about, and organised around stages of writing – Planning, Drafting, Revising, Editing and Publishing. Students are monitored through these stages using "task management boards". The specific focus on non-fiction writing focuses on the development of four text types – Personal, Descriptive, Narrative and Persuasive.

The focus on writing itself and not just the content of the writing is repeated in another case study site with an explicitly 21st century skills purpose:

> The teachers work with the learners *Mevo'ot HaNegev (Israel)* not only on contents, but also on writing and thought processes; they make sure the learners employ the skills of summing up, summarising, and of using synonyms for description instead of the specific word. In another project, the learners built benches out of mud; according to the pedagogical guide: "The idea is to destabilise their conceptual thinking and attempt to make them think about things differently, and to develop their critical thinking."

Among the most complete mapping of 21st century competences onto the learning objectives of one of the ILE innovation sites is seen in the *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)*:

> It places great emphasis on the development of several 21st century competencies in their students.
>
> 1. Teamwork and collaboration: these are demonstrated among all the people in school. The principal acts as a role model to realise the IE [Invitational Education] core values (trust, respect, care, optimism) and works collaboratively with colleagues. Team leaders facilitate the IE culture through their teams and their work. Collaborative learning among peers is strong, demonstrated not only between classmates during academic subject lessons, but also across grades in Caring Groups and other activities.
> 2. Capacity for problem-solving: there is professional training in problem-solving for all the teachers. Problem-solving becomes one of the pathways for learning in all lessons, and the capacity for students' collaborative problem-solving is gradually developing through coaching and facilitation.
> 3. Knowledge transfer to new problems: the school emphasises the teaching of generic skills and values and attitudes, such as ways of thinking, attitudes towards learning, and communication – all of which are important for knowledge transfer to new problems.
> 4. Digital and media literacy: there is an obvious emphasis on digital and media literacy through the school's commitment to leveraging the latest technologies for student use during the learning lessons. The "Smart Classroom" enjoys technical support from e-class and Oxford Press and the school is reallocating resources in diverse ways to reinforce IT.

Digital literacy

"Digital literacy" features in most lists of 21st century competences (OECD, 2011a). A fundamental reason to pursue technology-rich learning environments is that *we live in a digital world.* The digital transformation is continuing to change how people work, communicate, play and conduct their daily lives. This is the world the learners in most

OECD countries are currently immersed in, and it is only likely to become more so in the future. Learning environments that are at least partially digital provide learners with access to the tools and ways of operating that are infused in our world, but also engage them in modes of learning that mirror their personal activity. The pedagogies and learning experiences using digital resources (see below) connect with numerous cognitive competencies and capacities, but also with digital literacy – helping to develop critical skills for engaging with, consuming, and producing digital media (Groff, 2013).

There are numerous examples in the cases of the active use of ICT and digital resources in the learning environment, but no-where is its place as a 21st century competence better expressed than by a teacher at *Mevo'ot HaNegev (Israel)*:

> "It is obvious that if we want to produce citizens of the twenty-first century we must use technology." The technological infrastructure is of great importance for working on the projects at *Mevo'ot HaNegev*: it enables the use of photographs, maps and virtual experiments; it allows the teachers follow up of task submissions and knowing where each learner is with respect of work; and it permits knowledge creation in a way that was impossible without the technology.

Social competence

Social competence has a prominent place among the so-called 21st century competences. The extent to which the case study innovations recognise the social nature of learning is one of the foci of Chapter 7 in reviewing how *The Nature of Learning* principles are interpreted in the concrete cases. In this chapter, we highlight how certain of the study innovative cases have prioritised social competence within their learning programmes and evaluation arrangements.

> The *REOSCH (Bern, Switzerland)* has developed an educational concept that is about attentive learning or "executive attentiveness", i.e. the ability to consciously control one's own attentiveness. They offer learners structures through which to learn how to deal sensitively with their resources: mental training, martial arts, trekking trips, and specifically adapted teaching methods and tools (weekly plan, working journal, and energy diary). The martial arts classes are not a variant of physical education but are a subject in their own right and staff attend the trainings just like the learners. The headmaster explains why a mountain is usually chosen for the trekking trips:
>
> > Last year, we were in the Pyrenees. There you face a mountain peak: 3000 metres high. We're still in flat country and we know: this is the climb. Most of them have never ever done anything like that. And they ask themselves: How can you actually climb this mountain? And what sense does it make? Why am I even doing this? ... And we keep telling them that this mountain may be the only mountain they will ever climb in their lives, but it is just a symbol of all the mountains waiting for them. Do we go for it? Will you tackle this now or not? The feeling they have up there is terrific for everyone. I think this reflects what this is all about. They face a challenge – without their parents' help.
>
> At the *Zakladni skola Chrudim (Czech Republic),* students attend a wide range of seminars on social-emotional development, aiming to build a well-functioning team with peers and teachers and to practice communicative and social skills. They focus on mutual knowledge of pupils and teachers, student confidence and knowledge

of their individual differences, mutual respect, confidence and responsibility. There is also attention to effective verbal and non-verbal communication, and activities include role-plays and relaxation activities.

The *NETschool (Victoria, Australia)* includes a timetabled MOVE session in which both home- and centre-based learners participate, with three strands: 1) Personal development (e.g. team games, drug information); 2) Community work (e.g. community gardening, training dogs to assist disabled people); 3) Physical activities (e.g. rock climbing, yoga, ball games).

Without feedback or recognition, students will not necessarily accord social competences priority among all the other learning taking place. Schools have traditionally awarded "good behaviour" (indeed, a longstanding critique of many schools is that they have been more concerned about good behaviour than anything else). What certain of the case study innovations have done is to make assessment of social learning more systematic and visible as part of the general assessment of student learning.

In addition to subject-specific assessment, there is also feedback at *Europaschule Linz (Austria)* on social competences including in the assessment portfolio. This is based on seven criteria: "respects the other's personality and work", "is able to co-operate", "is able to communicate", "shows reliability and sense of responsibility", "is able to deal with criticism", "abides by rules agreed on", "handles his/her own and the other's property carefully".

In *Early Natural Science for Sustainable Knowledge, Primary school OS Janka Padeznika, Maribor (Slovenia)* social competences are rewarded with fair-play awards. Every class regularly chooses their "fair play student of the month", and in a final meeting the student council and the teacher assembly together pronounce the "fair play student of the school" based on criteria like friendship, respect, friendliness, consistency, and conflict-solving.

Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China) highly appreciates the students' efforts and their accomplishments throughout their learning. The commendations are not only for their academic achievements, but also for their good behaviour, conduct and other virtues. The "Good Students Follow School Rules and Behave Well" scheme encourages students to cultivate good virtues and positive values. Importance is also placed on enhancing students' care for the community and pupils from the South Asian families.

Changing the content of learning

It is impossible to draw a rigid line between competence and knowledge, capacity-building and content. To seek to exercise competence without content quickly risks becoming empty technique. But that it is impossible to draw a very firm line does not mean that there is no distinction at all. Indeed, it could be argued that the widespread focus on 21st century competences, as an umbrella term under which to consider a range of generic capacities, has had the unintended consequence of turning the spotlight away from "21st century content".

Global developments provide an important content focus for the different innovative cases, whether ecological sustainability or intercultural understanding and multi-language capacity. Inter-disciplinary content is part of this, as it is about content rather than skills and it recognises that the learners do not and will not confront a world neatly divided into problems defined by disciplinary boundaries but one in which several problems are involved at once.

Interdisciplinarity

With interdisciplinary content, learners are pushed to integrate information into consistent knowledge structures and to practice its flexible transfer to new topics. The learning activities are defined by the questions that the learners work on and by the skills they acquire, rather than the separation into different subject topics.

In *One-room School, Gesamtschule Lindental (Switzerland)* one main topic is chosen for every term and is represented in an appropriate drawing on the blackboard made by either the teachers or the pupils. Whenever possible the teaching contents are related to this main topic, and every term is concluded with a festive evening where all the parents are invited and where the pupils perform a play or show.

Community of Learners Network (British Columbia, Canada): The work in K-7 classrooms (age 5-13) is very multidisciplinary, and seeks to incorporate as many subject areas as possible within large inquiry-based learning sequences. For example, the Healthy Living inquiry that the teachers have created integrates Language Arts, Social Studies, Mathematics, Physical Activity, Visual Art, Dance, Drama, Science, Healthy Relationships and Social Responsibility.

The epochal projects at *Lobdeburgschule (Thuringia, Germany)* are based on general subjects, with interdisciplinary content. For example, in "My body" the pupils learn to identify and to name different parts of the body, to measure them and to paint about them. The planning of the epochal themes includes a lot of pupils' activities. Multi-methodological working forms are used.

Table 3.2. **Themes of the epochal projects in Lobdeburgschule, 1st-3rd grade**

Time	First grade	Second grade	Third grade
6 Weeks	Traffic	My Body	Our class community
8 Weeks	From the corn to the bread	Trees	Animals in autumn
	Festivities and traditions at Christmas	Festivities and traditions at Christmas	Festivities and traditions at Christmas
4 Weeks	Birds	Calendar	Weather
6 Weeks	Pets	Free time and media	Early spring bloomers
	Festivities and traditions at Easter	Festivities and traditions at Easter	Festivities and traditions at Easter

Source: OECD (2012) Inventory case study "Lobdeburg School of Jena", www.oecd.org/edu/ceri/LobdeburgSchoolJena.pdf (accessed 1 July 2013).

A significant transformative aspect of the *Australian Science and Mathematics School (South Australia, Australia)* curriculum in years 10 and 11 is evident in the eight "central studies" areas which involve the new sciences such as nanotechnology, biotechnology, and sustainable futures and the use of integrated approaches. Philosophy, sociology, history and communication skills are also included, as well as art and design, English, and health and personal education. Thematic topics include titles such as: The Body in Question, Communications Systems, and Sustainable Futures. Each Central Studies topic has an overarching fertile question which provides both an inquiry focus for learning and the subject of a final assessment task each semester.

A subject of interest at *John Monash Science School (Victoria, Australia)* is Issues Studies, which is an integrated unit which invites student inquiries about "issues of world significance".

Intercultural and language competences

Many of the cases in this study have a strong focus on language learning, for example in workshops in which the students can learn the native language of other students at their school and which involve students' parents.

The *Europäische Volksschule Dr. Leopold Zechner (Austria)* involves its many students from multi-ethnic and migration backgrounds in language and culture workshops. For every workshop period of six weeks, the children can choose among nine different languages, ranging from Arabic to Portuguese. The school also has several language classes in which all students learn together with students who are native speakers of that language. Learners are encouraged to use multiple languages, and value the ability to switch between different languages. In addition, the school has invested in English, as in this all are beginning language learners.

In the cross-cultural awareness programme at the *Miwon Elementary School (Korea)*, there are multi-cultural days and extra-curricular activities like bilingual newspaper making or bilingual presentation contests to stimulate the exchange between students with different native languages and cultural backgrounds. The students' parents are strongly involved as well, both in after-school language classes taught by them, and in Korean language classes for non-native speaking parents that take place on the weekends and during school vacations.

In the vocational school at the *Educating Multilingual Language Users Program, Rankweil (Austria)* students learn English, French, and either Spanish or Italian as foreign languages. Some of their courses are taught in English, and they can choose to take additional conversation classes in any foreign language. What is particularly interesting is the multilingual vocational training, during which they practice communication in multilingual situations, train to switch from one language to another, and learn to become aware of similarities and differences between languages.

"In the co-curricular afternoon all of our students do something different. Probably about half of them do a Language Other Than English (LOTE). We have about 15 languages running. About 40 students do these by distance education and we have a teacher who co-ordinates all of that. The students use either the phones or video conferencing to talk with their tutors in at the VSL (Victorian School of Languages) or Distance Education Victoria. We cover Mandarin, Indonesian, German, Latin and Italian among others. This year we had two face-to-face French classes and one face-to-face Japanese class." (*John Monash Science School* principal)

Sustainability

An obvious focus for "21st century content" is sustainability, climate change, and related themes. Again, to illustrate that such headings are more short hand than literal, the focus on environmental issues in schooling long predates this millennium and OECD/CERI among others worked on these issues since at least the 1990s (OECD, 1991). However they should best be described, such curriculum focus is clearly an important element in many of the case study sites.

Neta'im Environmental School (Israel) has an extensive programme on environmental issues. Students experience controlled consumption of school resources, such as paper, water, and electricity, and are introduced to recycling activities. The school initiates activities with the community in which the students act as environmental ambassadors during festivals or marches with green subjects.

In 2008, the leading staff team started to implement the innovative programme at *Mevo'ot HaNegev (Israel),* which emphasises environmental education, active citizenship, problem- and project-based learning (PBL) methods, and education to understanding. The ICT-based environment allows the learners flexible and creative uses of information, the ability to check and transfer the knowledge from one context to another, and to focus on the learner and the learning processes.

Finnish schools that use the "*Model Vihti*" focus on the production of food. Nature-connected education in school gardens or via collaborations with local farms allow the students to experience how many steps are involved in the production of food from the planning of the seasons, the growing of plants, gathering of yield to the processing of food. Products of the children's work are later used in everyday school life and the school also has excursions to the nearby forest, where children learn about topics like forestry, water systems, and climate change.

Liikkeelle! (On the Move!) (Finland) has three central themes. Environmental investigation activities are aimed at studying the learners' everyday settings from the perspective of natural sciences. The activities include investigations of air quality and noise measurements conducted in co-operation with the relevant experts and authorities responsible for these issues. "Everyday activities" examine the students' everyday settings in order to reveal those aspects that usually have an invisible effect on their lives and wellbeing. In "Society and Us" activities, students study historical and contemporary societal actions, and identify traces of such actions in their everyday settings.

Education for Sustainable Development, Flaktveit School, Bergen (Norway) translates its focus on education for sustainable development into a programme on waste disposal, for which it co-operates with a waste management company. It co-operates with a green agency on water resources, as well as with a large company which shows the children the environmental issues that large companies face. The objective of the programme is to educate the students to see their place in society and work towards a sustainable future.

Community Learning Campus (CLC), Olds High School (Alberta, Canada) is a proud member of the United Nations Educational Scientific and Cultural Organization (UNESCO) Associated Schools Network, a global network of schools that actively promote a culture of peace by focussing on the ideals and themes of UNESCO. The school has selected a number of themes for learning, which are focused on environmental stewardship and social justice.

Curriculum constraints?

It might be expected that learning environments that are innovating their content might experience established curriculum and evaluation requirements as a barrier to change. In the case study innovations, this is rarely mentioned. Indeed, the main experience from these particular sites is that their innovative content fits well within curriculum

requirements even if also going beyond what is normally expected. Both *Jenaplan-Schule (Thuringia, Germany)* and *Lobdeburgschule (Thuringia, Germany)* for instance, describe how the lessons are oriented to the Thuringian curricula at the primary, secondary, higher secondary levels, and for special needs, as do several others:

> In Spain, the official curriculum is quite flexible and facilitates its adaptation to the cultural reality and educational needs of students. However, the curriculum seen in the classroom is quite rigid, as it is normally the curriculum of textbooks designed by publishing houses. *CEIP Andalucía, Seville (Spain)* has got rid of textbooks and educational resources and methodologies have been diversified, designing their own classroom curriculum with the democratic participation of students.
>
> Although the educational objectives are prescribed by the Bernese curriculum for all state schools in the canton of Berne, this official curriculum still leaves room for the concrete teaching concept *(One-room School, Gesamtschule Lindental, Switzerland)*.
>
> *Breidablikk School (Norway)* adopted its new practical pedagogical model which integrates a week of interest-based teaching six times during the school year, within the general national model. The overall objectives remain the same for all tracks, however, as they are governed by the national curriculum and all pupils have the same final exams.
>
> The basis for the *Fiskars Elementary School (Finland)* model is the Finnish national curriculum, particularly its cross-curricular themes which aim to elaborate the general educational goals by integrating knowledge from different fields and dealing with themes more as phenomena, not as different school subjects.
>
> The *Royal Children's Hospital (Australia)* work is carried out on the understanding that the majority of children they support will either be about to enter, or have come from a school setting, and/or will be returning to a school setting. This may mean engaging with the academic requirements of the Victorian Certificate of Education, the Victorian Certificate of Applied Learning (VCAL), Vocational Education and Training (VET) courses, traineeships and alternate learning programmes as determined by statutory requirements.
>
> Learning at *Mordialloc College (Victoria, Australia)* is organised around Learning Matrices in which all essential learning elements in the matrix have been taken from the Victorian Essential Learning Standards (VELS).

Certain of the project cases describe how they have been able to work within the curricular requirements and then beyond them for the more demanding programmes that they have devised.

> As a public school within the province of Alberta, a basic education must provide students with a solid core programme, including language arts, mathematics, science and social studies. All students at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* in Grade 9 and Grade 12 write summative standardised Alberta Education province-wide examinations in all core subject areas. Even so, the teachers were clear that well-designed, inquiry-focused projects enabled them to go far beyond the Alberta provincial curriculum expectations.
>
> The *REOSCH (Bern, Switzerland)* largely follows the Bernese state school curriculum, though with a stronger focus on working with a weekly plan and a working journal in addition to the learning targets in the various subjects.

> All of the curriculum practices at *John Monash Science School (Victoria, Australia)* reflect the domains and dimensions of the Victorian Essential Learning Standards and Victorian Certificate of Education study designs. At the same time, many of the studies far exceed the requirements of these frameworks, including dimensions of the International Baccalaureate around interdisciplinary learning.
>
> Year 12 students undertake subjects within the South Australian Certificate of Education (SACE) following on or in conjunction with year 10/11 *Australian Science and Mathematics School* (*South Australia, Australia)*. However, within the broader state curriculum context, the ASMS has remained focused on its mandate of the development of deep conceptual learning within year 12.

This compatibility notwithstanding, the *Australian Science and Mathematics School* has nevertheless sought to influence the provincial curriculum in the direction of great inter-disciplinarity:

> The newly-released state-based SACE year 12 studies are framed within a discipline-specific context which differs from the interdisciplinary studies offered at the *Australian Science and Mathematics School,* in year 10/11. There have been efforts by the ASMS to influence the state curriculum by developing accredited subjects called Scientific Studies that are cross disciplinary (e.g. Human Performance, Avionics).

Rethinking the resources for learning

The compilation of innovative learning environments features innovations in resources. In this report, the focus is particularly on two forms of educational resource. First, the use of digital resources as compared with the more traditional forms of educational materials. Second, innovations in the facilities and infrastructure, including the use of learning space (see Figure 3.2).

Digital resources

Jennifer Groff (2013) discusses both the wide range of digital resources and that they are constantly evolving and permitting new uses in a paper about "tech-rich" learning environments for the OECD study. She draws on a UNESCO analysis (2010) to summarise the impressive range of digital resources at play in the diagram reproduced as Figure 3.3.

Many of the case study sites use technologies intensively as digital resources to expand the range of materials at their disposal.

> Located on a college campus, bound together in a strong collaborative partnership, has its distinct advantages. High school students have digital access to the library at Olds College, at the school or from home. The library collections between the two educational institutions, *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* and *Olds College* are amalgamated giving the high school students access to the NEOS system, which allows access to university and college databases and books.

Exploiting technology to create virtual learning environments is a feature of several of our cases. These tools access many of the key 21st century skills and represent many of the activities that learners engage in outside school. The presence of a virtual learning

Figure 3.2. **Innovating resources in the pedagogical core**

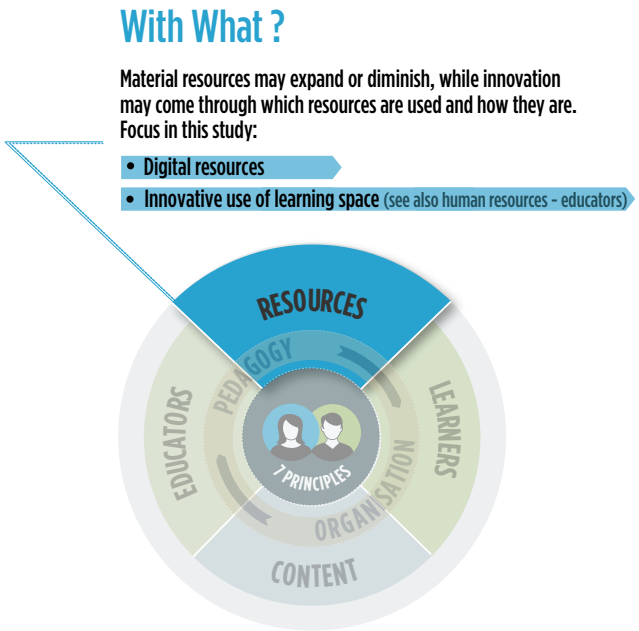
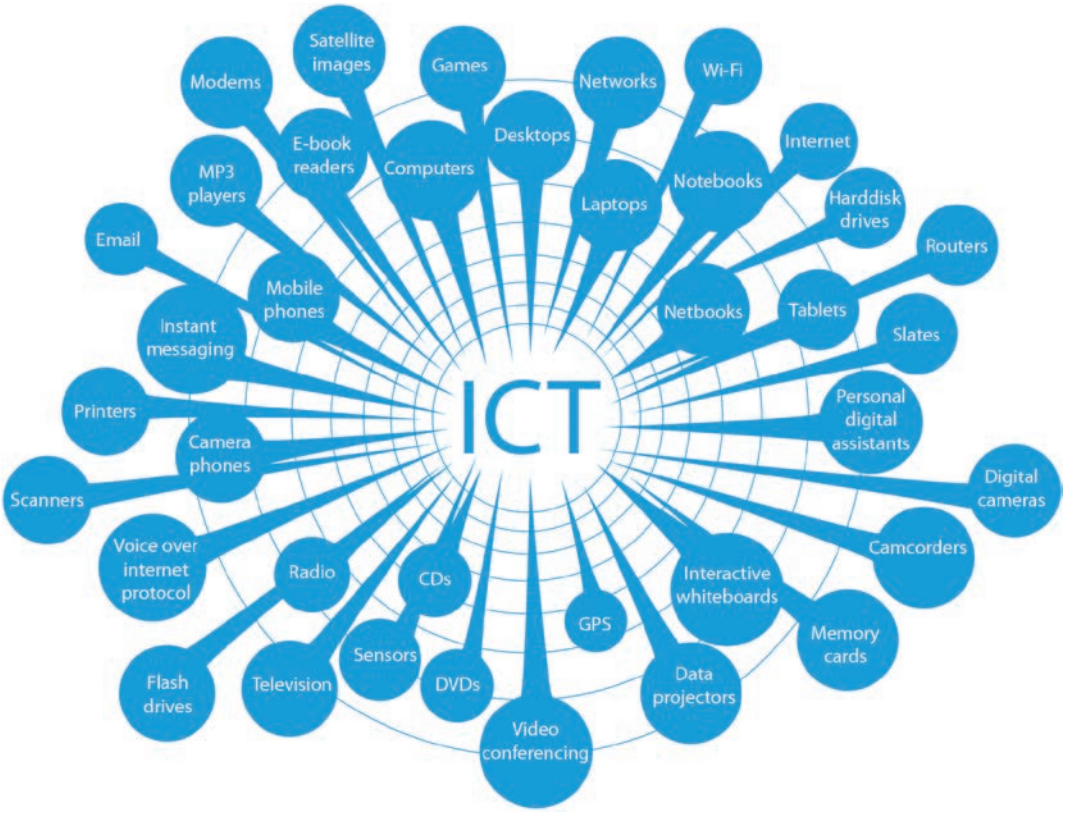


Figure 3.3. **Common and emerging innovations of technology in learning environments**



Source: UNESCO (2010), *ICT Transforming Education: A Regional Guide*, UNESCO Publishing, Bangkok.

environment can serve the important purpose of increasing equitable access to education for potential students who might not otherwise have such an opportunity.

"Tech-rich" is a way to characterise learning environments that make ample use of digital resources and have invested heavily in their technological infrastructure. A number of the project innovative learning environments fit this description.

> *Instituto Escuela Jacint Verdaguer (Spain)* avoids using textbooks outside certain subjects where learning tends to be linear. Instead, the teachers (facilitators of learning) design and prepare any materials used, mainly by means of the Moodle platform. The teachers also look for the best available resources: software, web pages, educational games, videos, simulations. They draw up materials for learners' families as well, so as to promote and facilitate student participation and so that the learning environment reaches students' homes.
>
> Learners and teachers at *Mevo'ot HaNegev (Israel)* are provided each with a laptop allowing on-going communication within school and without. The entire school and all classes are equipped with Wi-Fi (wireless networking), whiteboards, projectors and loudspeakers enabling the teachers to perform the frontal teaching by using presentations and the internet.
>
> The learning environment at *Royal Children's Hospital (Australia)* has been enhanced by the provision of a number of different learning tools including an interactive whiteboard, netbooks (both within the learning space itself and attached to the bedside tables of beds on the adolescent ward), iPads and iPod touches. A partnership with Livewire was also developed to promote and provide access to a secure and moderated social networking site (Livewire.org.au) for young people with chronic illnesses.
>
> Each of the *Elementary Connected Classrooms (British Columbia, Canada)* is equipped with a camera to project each site onto a screen. The screen is divided into four quadrants for each teacher and all students to interact together at one time and become one class. A Smartboard in each classroom allows each site to transfer as well as share lessons or information between one another simultaneously through a programme called "Brigit". Along with these bridging tools, each site has speakers, cordless microphones, Netbooks and headphones for each student to use at their convenience, along with, digital cameras providing the transfer and social connection that is the glue that keeps students engaged.

Not surprisingly, the specialist science schools in Australia can also be properly described as "tech-rich":

> A key feature in the *Australian Science and Mathematics School (South Australia, Australia)* is the abundance of ICT facilities and their spread throughout the open space learning environment. Such facilities include desktop computers on mobile trolleys being available throughout all of the learning commons and studios, a grid of floor-plates for plug-in power and networks and a wireless environment for laptops. Over 80% of students bring their own laptops and the ASMS makes provision for those students wishing to access a laptop at school or at home.
>
> A distinctive feature of the *John Monash Science School (Victoria, Australia)* is the use of web 2.0 technologies to host resources and facilitate online forums. It means that "everything is online and it's accessible. We're using Google Apps (applications), even bulletins, course content, interactions, emails, blogs, and

Google Videos. Now some subjects are using video pre and post to extend students." (Assistant principal)

Virtual "classrooms" and settings are an important extension of learning environments in a number of the study sites, adding to the blends of resources and learning options.

Liikkeelle! (Finland) is a versatile service that acts as an umbrella for various types of models, good practices and learning materials. It provides the tools and pedagogically functioning practices. The element which has demanded the most effort is the virtual environment Linkki (in English, Link). Link seeks to enrich teaching in schools by providing a social media tool that is safe to use and easy to implement. It is based on an open source and free of charge social networking software, Elgg (see http://elgg.org/). In order to develop a virtual environment serving their own purposes, Liikkeelle! co-operated with a commercial software company, which technically implemented the virtual environment Link using Elgg. Link is a forum for social networking among students, teachers, and various kinds of experts, in which users can publish blogs, establish working or friendship groups, share files, pictures and movies, engage in discussions, and send messages to each other.

The "virtual campus" school system *Mevo'ot HaNegev (Israel)* enables every teacher to develop a course website. In this way there are 500 virtual learning environments being used to store learning products and learning environment, available for use from any place at any time, and provide an ongoing communication between teachers and learners on the various courses and classes. The teachers invest a lot of time and know-how in developing the course sites, using a wide variety of information sources, communication with peers and colleagues, and most importantly feedback and a direct connection to the teacher. Before the submission of a task or before an exam, the teachers open forums where they dedicate many hours in response to questions and messages.

In the *Internet Classroom, Kkofja Loka Primary School (Slovenia)*, the school uses a virtual learning environment ("e-classroom") to individualise student learning. Students work individually or in pairs on teacher-designed materials and tests in order to reach goals objectives of the official curriculum. The digital system allows teachers to keep track of when individual pupils have performed which activities in the e-classroom, and classrooms are open to parents who wish to observe the activities.

The *Australian Science and Mathematics School (South Australia, Australia)* curriculum is available online in the virtual classrooms, including the inquiry programmes for the semester, assessment tasks and rubrics, and many resources for students to use in their learning. These resources have been designed by the teachers and are available to both students and parents, former students, and teachers from other schools who are involved in the ASMS, professional learning programmes.

The role of ICT in enabling access is an important one; this role lies at the core of certain of the learning environments that have featured in our study. Some of the learner populations targeted are not the advantaged groups who have already crossed the "digital divide" but those at risk of exclusion.

At the *Escola Móvel (Portugal)*, the aim is to give permanent access to a virtual, national-curriculum learning environment for secondary-age students who would

> otherwise be excluded. The content is delivered through online, synchronous classes and includes both individual subjects and cross-curricular areas, personalised through an individual tutor. The virtual learning environment is complemented by four face-to-face weeks a year for each learner.
>
> The *Open Access College (South Australia, Australia)* provides the opportunity to continue education to those who are not able to attend regular schooling. The personalised, virtual learning environment features individual learning plans that are developed for all students, with on-going contact between teachers and individual students. Interdisciplinary themes are developed based on student interests and resources are accessible for each student online to access in their own time.

These examples are illustrative of the more general point about technology resetting a number of the standard characteristics structuring education, where it was traditionally assumed that learners were in proximity one to the other, in proximity with their teachers, using materials (books, other materials) that could be held. Distance learning is not a new phenomenon but the ubiquity of powerful inexpensive ICT, plus increasing sophistication in the design of ways of incorporating those technologies into the learning environment, means that the scope for breaking with these defining constraints grows constantly. Of course, this is not to argue that learners will no longer learn in proximity to their fellow learners and teachers, using books, etc. – the cases in our study show just how strong is the role still played by physical and temporal proximity. Yet, change is definitely on the way.

By way of contrast, one of the cases – *Saturna Ecological Education Centre (British Columbia, Canada)* – portrays something in stark contrast, summed up by the researcher:

> Dependence on technology is minimal. With the exception of one laptop, the only technology I saw during my time at the site was the mini-hydro dam that one student was designing with the help of his mentor, a local architect. There is no cell reception at the site, no other electronics, no one walking around with ear buds installed and no one worried about it at all. There are two large well stocked bookshelves.

Innovative use of educational space and infrastructure

This section discusses resources in the more traditional sense of buildings, facilities and physical infrastructure. *The Nature of Learning* principles can be extrapolated in terms of their implications for the design of such resources i.e. they should facilitate engagement, be motivating, and recognise the social nature of learning, allow for individualised pedagogies and formative assessment as well as larger group work, and facilitate work that makes a variety of connections. Julia Atkin, in her contribution to the most recent OECD compendium of leading educational designs (OECD, 2011b), restates such conclusions in ways to be most targeted at educational designers in thinking about the use of space and physical materials. She seeks to get beyond blanket calls for greater "flexibility", arguing for facilities designs that:

1. Promote learning for students, professionals and the wider community through active investigation, social interaction and collaboration.
2. Support a full range of learning and teaching strategies from direct explicit instruction to facilitation of inquiry to virtual connection and communication.
3. Support disciplinary and interdisciplinary learning.

4. Move beyond the simplicity of flexible open spaces to integrate resource rich, special purpose spaces with flexible, adaptable multipurpose spaces to provide a dynamic workshop environment for learning.
5. Support individual, 1-to-1, small group, and larger group learning.
6. Are age-stage appropriate.
7. Facilitate learning anywhere, anytime, by any means, through seamless access to ICT, distribution of learning resources for ease of access in learning spaces and accessibility beyond the traditionally defined school day.
8. Activate and invigorate learning spaces – indoor and outdoor.
9. Inspire participation in, and responsibility for, the learner's community.
10. Enable all aspects of the buildings, building design and outdoor spaces to be learning tools in themselves.

These guidelines assume that there will be active learning, often involving different "teachers" and resources and settings; that there will be mixes of pedagogical approaches not artificial choices such as direct instruction vs. guided discovery; that ICT will be prominent in many learning environments, using a wider range of specifically designed learning spaces; and that all the building and infrastructure will be potential sites for learning. The importance of "mix" has been underlined already in Chapter 1 and will be again in the next chapter. Hence, Atkins' guidelines fit well with the innovative learning environments analysed in this study.

Many learning environments are located, of course, in settings that use neither bespoke design nor purpose-built educational facilities. Nevertheless, many of the examples show how much can be achieved within the constraints of existing buildings and facilities, and it may be important for learning environments to attend to physical design and decoration as symbolic that innovation is in train.

In *Europaschule Linz (Austria)* the learners are encouraged to participate in designing and arranging their classrooms as inspiring workplaces. Each class can take part in the school's "Innovative Classroom" competition and win a cash prize for their class. This project is meant to encourage pupils to assume responsibility for their own classroom: it helps to strengthen the sense of community within the class and teaches pupils to respect the need for tidiness and order.

The change in the distribution of tables and chairs in the classroom was only one of the first changes introduced in the physical environment of *Instituto Escuela Jacint Verdaguer (Spain)*. Little by little, the teaching team reformulated the spaces of the pre-primary and primary school building – walls have been removed to create more common and open spaces and others have been constructed to make wide corridors look smaller and create more educational spaces.

All classrooms at the early childhood centre in *Centros de Desarrollo Infantil del Frente Popular Tierra y Libertad, CENDI (Nuevo León, Mexico)* have been transformed into learning laboratories, by presenting objects of knowledge on their walls as visual aids to the knowledge they are building every day. The availability of learning corners in classrooms, as well as space, time and symbol-handling allows for early stimulation which facilitates the learning of objects, colours, information and emotions.

It is important to make the learning uppermost rather than to privilege architecture that is unconnected to the learning enterprise:

> As the assistant principal at *Mordialloc College (Victoria, Australia)* said: "Quality is not just about flexible spaces; quality is about enabling your students ... it's about pedagogy to shape our learners". However, the building of the Learning Centres has offered a tangible expression of the ILE, a unique environment which has attracted widespread interest and supported a renewed pedagogical approach. The spaces lend themselves to pedagogy which engages students in personal and interpersonal learning through an integrated, oriented approach to curriculum.
>
> Located at the southern end of the Ralph Klein Centre, the physical layout of *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* is designed to provide space for classroom, team and individual configurations, which allows for self-directed study, project-based or problem-based work and collaborative learning opportunities. One of school district leaders stated that early in the process they were clear that the type of innovative, collaborative learning design they had in mind had to drive the building plans.

Many of the practices in the innovative learning environments go hand in hand with a more open and flexible use of space, informed by particular models of how learning will be organised. The Victorian project cases feature prominently as they were part of a wider programme for redesigning educational space.

> At the *John Monash Science School (Victoria, Australia)*, the physical learning environment allows for flexibility in teaching and learning. The ground floor is designed to be a multidisciplinary and communal space, whilst the first and second floors are duplicate dedicated learning spaces. The first and second floors are divided by learning bridges, each half dedicated to two pastoral houses where students usually begin each day. These have a mix of open spaces, formal science laboratories, and small break-out rooms used for student meetings or small teaching groups. Modular furniture is used to generate the boundary of each specific learning area resourced by interactive whiteboards, data projectors and other resources, and used as instructional and recreational spaces.
>
> The *International Business College, Hetzendorf (Austria)* has also adopted a physically open environment. This business-oriented secondary school uses a reform pedagogy and different forms of self-driven student learning with an emphasis on social interactions. The physically open learning spaces include a "business centre" with meeting desks, computers, and so forth, lending authenticity to the learning space.
>
> At *Instituto Escuela Jacint Verdaguer (Spain)* each student has a series of weekly tasks to be completed in different spaces of the classroom. The space has to facilitate mobility and co-operation, so that teachers can approach students and guide their work. Tables are arranged for group work, and an electrical system built on the ceiling above the tables enables students to plug in their laptops at the same time during lessons.
>
> At *Anim8tors@MWPS, Mount Waverley Primary School (Victoria, Australia)*, a new building was purposefully designed to create flexible learning spaces under the umbrella of a shared "great space" and this has facilitated the integration of different disciplines, co-operative learning, and a team-teaching approach.

A school district leader who became the first director of the Community Learning Campus in the project *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* explained:

> We wanted something that was very open, very flexible, with movable walls, technology very accessible, by making sure we had enough places for people to charge batteries. And then, the space could be reconfigured to suit a variety of needs. So, the students, for example, within the fine arts facility, might use the stage area to have drama classes or maybe configure it for them to actually do presentations there. In the quad areas, the design was very deliberate. There are some core classrooms that might be considered more traditional; however, the furnishings are table-groupings so that they don't necessarily look like traditional desk upon rows of desk type of classrooms. In each quad, there's a big open area where students can meet, work together, and then there's a small office area, called a Multipurpose Room if they need quiet space for breakout. They also can flow out into the concourse area and work there. And so, there's just a real variety.

Based on the educational model for Discerning Schooling, *Australian Science and Mathematics School* (*South Australia, Australia)* provides a range of learning settings for variously-sized groups and configurations, with open plan teacher preparation work areas also included. Traditional classrooms are replaced by eleven "learning commons" which accommodate up to 50 students and eleven "studios". There are seminar and meetings rooms, student and staff social areas and central common spaces. The eleven specialised studios, accessible from the learning commons, provide support for practical and research work related to mathematics, multimedia, physical sciences, applied technology, presentation/performance, environmental sciences, life sciences and human performance.

Education support is provided across a number of different spaces and places of the *Royal Children's Hospital (Australia)*, including inpatient wards, day treatment areas, outpatient areas and specialist clinics. Each of these spaces can provide innovative opportunities for learning in places not specifically designed for education.

The flexible learning space in *Mordialloc College (Victoria, Australia)* is a very large area, and accommodates the equivalent of five home groups of students with the capacity for eight in all. The central area has a lectern and a big projection area surrounded by nests of tables and chairs which are organised into five designated family group spaces. There is an abundance of glass and consequently an abundance of natural light. Many examples of student work are on display. Flexible tables of various shapes and over 120 polypropylene chairs surround the central area which can be connected in numerous ways.

NETschool's *(Victoria, Australia)* exterior is like that of a business or office within a community setting. It is located in a former bank building in the city centre, and the interior design resembles a workplace, with a central conference table flanked by individual workstations. It is carpeted and the walls covered with felted material. The workplaces are individually decorated with posters and pictures, and the shelves contain pot plants as well as books and papers. Students are also free to learn in other places of the whole school such as the hallways or outdoor areas. This flexible use of, and sense of space in, NETschool was distinctive from more conventional schools, but is now considered in new school design as being significant to learners in general, and not just those experiencing anxiety.

There are different approaches and examples given in the ILE cases regarding the question of how far the aim should be to open up and "deprivatise" educational spaces. The general trend is towards creating visibility, which means among other things to open up classroom doors so that learning and teaching can be shared, thus breaking down the close association between a particular learning space and a single teacher. There is discussion of visibility elsewhere in this report but one passage summarises this well:

> A key feature of the building design is that the Learning Commons areas are deprivatised, with staff work areas being located adjacent to and visible from the learning commons. The teachers can easily observe each other's teaching. The whole thing is really open so that everyone feels a sense of belonging to a community where the focus is on learning. "There is no door to the office so you can go to the teacher anytime" (year 10/11 student at *Australian Science and Mathematics School*, *South Australia, Australia*).

Nevertheless, there are also instances where the possibility to develop a sense of ownership and belonging is highly appreciated, whether by learners or teachers.

> An important aspect of the organisation of spaces inside *Instituto Agrícola Pascual Baburizza (Chile)* is that each teacher has his or her own classroom to receive different groups of students for their lessons. This aspect is highly appreciated by teachers and it is actually an aspiration many teachers have in Chile; it allows them to have their own materials, arrange the rooms their own way and plan their activities. They get to have students immersed into the taught subject and in the classroom.
>
> Student-centred spaces for collaborative and inquiry-based learning are a key emphasis at *Mordialloc College (Victoria, Australia)*, with each student having a home-based personal study desk and locker located in a designated tutor group meeting area in one of the learning commons.
>
> At the *NETschool (Victoria, Australia)*, students have their own desk and computer space, many of them personalised with pictures and familiar objects. Students appreciate having their own space, which one student expressed this as follows: "Well it's sort of my own personal area ... I like peace and quiet and no interruptions... I can be like – I'm trying to get my work done, can you please move along and come talk to me at break". The learners were very articulate about the effects of the physical environment on their psychological states and on their learning. For some, this area provided a sense of peace and security – "my little bubble" as one learner put it – whilst others spoke of the importance of ownership and familiarity.

Memorable learning settings

Providing an educational setting that is striking or memorable, may be both conducive to good learning in itself and be symbolic of the priority that is given to learning such that it warrants such design. Some emphasise especially the importance of openness and light.

> The *John Monash Science School (Victoria, Australia)*, is physically striking because of its overwhelming sense of openness and natural light over three floors.
>
> Beyond the functional and philosophical aspects of providing an educational work environment, students, teachers and visitors who enter the foyer and learning spaces at *Australian Science and Mathematics School* (*South Australia, Australia)* are immediately impressed by the flexibility, and the sense of openness and light.

A visitor to *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* is initially struck by the open design, the amount of natural light and the variety of spaces.

Memorable designs and facilities again, however, do not necessarily have to be cutting-edge. The Chilean example below shows what can be done with the imaginative use of facilities that reinforces the special sense of a particular learning community. Both the Thuringian and Spanish cases develop unusual decorations and outdoor environments.

The train wagons are one of the most representative spaces of *Colegio Karol Cardenal de Cracovia (Chile)*. It has come to be known also as "the school of the trains". The wagons were going to be scrapped and the Principal got them to be used as innovation spaces, offering new activities different from traditional school offerings. For him the wagons represent the living engine of the school.

When one first walks into the site, one is struck by the oddity and originality of the buildings. Each looks as though it is ready to tip over, all askew. The builder, another local resident, designed them this way so that whenever anyone saw them in a photograph, they would instantly recognise them as being on *Saturna Ecological Education Centre (British Columbia, Canada)*.

There is the so-called "School Break Dream" at *Jenaplan-Schule (Thuringia, Germany)* – a fantasy-like landscape which is based on student ideas since the year 2000. Promoted by the school's social worker, students' ideas were collected and the "school recess dreamers" constructed models and discussed rational uses for the school yard areas, honouring student needs. Since that day, the "school recess dream" has continuously developed.

A striking aspect of the *Instituto Escuela Jacint Verdaguer (Spain)* is the decoration and the organisation of the space both inside and outside the classrooms. There is not a single wall that has not been painted or that has not a piece of work created by present or former students; there is no space that has not been conceived to maximise its possibilities. When going inside the primary school building, one can find a snail farm in the corridor, a penguin getting out of a classroom, changes in the floor tiles because walls have been removed to make a more open room, wooden walls creating new meeting places, glass walls visually connecting two classrooms.

The element of *Dobbantó (Springboard) (Hungary)* that differs most noticeably from traditional classes is the physical environment itself. Dobbantó classes have their own classrooms; these rooms tend to be among the nicest, if not the nicest, rooms of the participating schools. This has a double function: it is primarily designed to create a pleasant environment for students who are in the process of abandoning school, counteracting their negative image of schooling. However, it is also important to position Dobbantó classes higher in the school hierarchy in the eyes of other students, who thus see Dobbantó as classes that receive special attention.

The Hong Kong case study is one example of taking seriously Atkins's guideline 8) about "activating and invigorating learning spaces – indoor and outdoor" with its focus on "Story Garden".

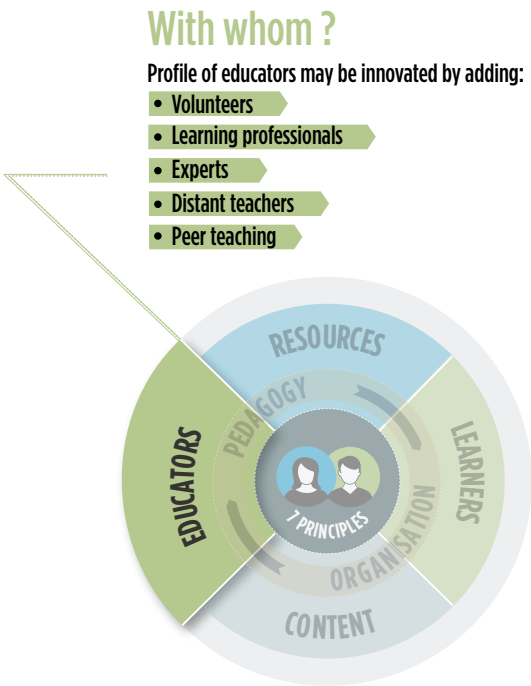
Promoting students' writing is the main theme of the Story Garden. The *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* has worked to become a green garden school and is highly aware of the positive effects plants

and gardens have on the educational environment. Story Garden is an inviting place for students to create their writings and share them with others. The writings from different grade students are posted on the walls next to the garden after lamination by their teachers. The garden has won the award for best school garden in Hong Kong. The garden which is designed in the pattern of Hong Kong Regional Flag is frequently made use of to teach the students civic education.

Enlarging the profile of educators

Teachers and educators have to play complex roles and become expert orchestrators of learning settings in complex, contemporary learning environments. The innovation may not simply be through doing new things or teaching in innovative ways; the options available to the learning environment may be extended by bringing others into the teaching profile, with their particular experiences, and knowledge, and contributions. Bringing in different experts, adults or peers to work with or act as educators is routine in many of the case study learning environments. Fellow learners are commonly called on to be educators to their peers, a collaborative learning experience that brings benefits to the "teacher" in enhancing understanding of the subject area, confidence and study skills, as well as to the learners so being "taught".

Figure 3.4. **Innovating the profile of educators**



A feature of many of the case study ILEs is therefore their varied educational workforce. Sometimes, the educator refers to specialist support to the mainstream teacher which is actually the main focus of certain of the innovations in this study:

Carmen, an 18-year-old high school graduate, is the instructor this year. She arrived two months before and will be living in a student's family home during the school year. She is glad to have the support of an itinerant pedagogical

advisor. The *Itinerant Pedagogical Advisor (API) programme (Conafe, Mexico)* aims to engage in pedagogical interventions to improve the learning of children who are lagging behind, to advise teaching-learning facilitators on their practice, and to strengthen parental involvement in their children's education.

The "School Improvement Advisors" in the programme *Obiettivo: comprensione (Target: understanding) (Ticino, Switzerland)* are introduced as new figures in the school domain, acting as consultant, critical friend, and academic researcher who help and give advice in a non-invasive but scientifically sound way.

At the *Consejo Nacional de Alianzas Educativas in Monterrey (Nuevo León, Mexico)*, the focus is on improving academic achievements and reducing drop-out rates at schools in impoverished suburbs. One of the methods used to this end is that young professionals from local universities mentor students at risk of dropping-out (known as the "amigo mentor").

The role of mentors is to support learners in achieving their educational or vocational goals. Whilst mentors at *NETschool (Victoria, Austarlia)* are all trained teachers, their focus in this setting is on building relationships with the learners, and providing them with practical assistance.

More common among the ILE cases are different ways of extending the profile of the educational workforce by exploiting the specialist knowledge of external professionals, craftspeople and other experts and adults as learning facilitators.

At *CEIP Andalucía, Seville (Spain)*, there are meetings of learners with authors and illustrators, such as the ones held with Lola Casas. Students got signed copies of her book *Tú acabas los poemas* [*You finish the poems*], which is exactly what they did and sent to the author. The next year, the school published a book with the same title and sent a copy to Lola Casas so that it was she who completed the poems.

At *Mount Waverley Primary School (Victoria, Australia)*, strong partnerships with outside experts have been formed through, and were critical to, the introduction of the "Anim8ators" project. A unique relationship developed with the Melbourne-based animator Adam Elliott, who has won two Oscars for his clay animation films. The Parents and Friends Association supplied technical equipment and funded a visit from the filmmaker. Teachers were trained in animation techniques at the Australian Centre for the Moving Image.

In the *Fiskars Elementary School (Finland)* model, artists and craftsmen from the village administer student workshops on diverse topics, such as woodworks, fine arts, or glass-blowing.

At the *Saturna Ecological Education Centre (British Columbia, Canada)*, each student works in a mentorship relationship with an adult in the community. Middle-years learners spend half their time outside the school building working on personally-designed small group projects. Students experience a great deal of inter-dependent, intergenerational learning, supported by "Connecting Generations" – a database and system that allows young people and older members of the community to connect up for focused "cognitive apprenticeship" opportunities, as well as for more general learning from one another.

The martial arts classes are not offered as an alternative to physical education classes at the *REOSCH (Bern, Switzerland)*, but they are a subject in their own

right and compulsory for both teachers and pupils. The REOSCH co-operates with three martial arts schools in Berne, which means that most of the trainings take place in external facilities and are conducted by recognised martial arts masters.

Community members with expert knowledge in a variety of disciplines are invited into the classroom in the *Community of Learners Network (British Columbia, Canada)* to enhance the learning. Groups of children go out into the community to learn there as well: community centres, local forests, historical sites and local educational facilities such as museums are considered to be essential to enriching the learning environment. Human resources include those employed by the School District, such as Aboriginal Education resource people, and others who have varied expertise – scientists, artists, photographers, musicians, dancers, hockey players, senior citizens, Aboriginal elders, authors – all reside in the community and further afield and contribute to the learning environment.

All human resources of *Europäische Volksschule Dr. Leopold Zechner (Austria)* are used to support learning, including the Turkish-speaking janitor who is an important male figure especially for the Turkish boys.

Community mentorships and intergenerational connections are integral to the learners' experiences at *Saturna Ecological Education Centre (British Columbia, Canada)*. Community members volunteer to partner with a learner on their IDS project. The students are in control of the project, which can be a challenge at first for some of them if they've never been involved in independent learning before. Mentors are there to help, they do not replace the traditional teaching role nor run the projects. One of the community mentors stated that it can be hard to hold back sometimes, to let the student lead. She sees her role as more of a "big sister, not an authority figure, but encouraging them, asking good questions and being a resource."

Parental involvement

Whether as support teachers or in other voluntary roles, parents may be prominent among the adults who come to play an active part in the learning community. This may be part of strengthening social capital and the sense of community; it may also be as direct teaching capacity in assistance to the mainstream educators.

At the *School and Work College of the "Living Together" Association, Vienna (Austria)*, some parents make the commitment to be actively involved in the everyday activities of the school in order to make it a place to both live and learn.

Similarly, at the *Lernwerkstatt im Wasserschloss Pottenbrunn (Austria)*, parents contribute eighty hours of voluntary work each year to this parent-founded inclusive learning environment. This co-operation also helps parents to closely understand the principles that underpin the school, in turn helping to ensure that they reinforce them in the home environment.

At the *Discovery 1 and Unlimited Paenga Tawhiti, Christchurch (New Zealand)*, the philosophy of the school has been that everyone involved in the school community is both a learner and a teacher – including parents.

Parents can also serve as a learning resource to teachers, helping to introduce new ideas for their classrooms. In the *GTVS Europaschule (Austria)*, parents

contribute not only to the planning and administration of classes and the parents' association, but also to a cultural café, where they (especially those from a migrant background) and teachers can meet once a month outside school to discuss relevant topics (e.g. the role of the native language, etc.) and to form valuable social networks between representatives of different cultures.

Among the core activities at *CENDI (Nuevo León, Mexico)*, are regular meetings with their grandparents, who visit their grandchildren weekly at CENDI and during three hours, interacting with them in different ways: telling family stories and histories, social histories and aspects of their neighbourhoods, and dances, songs and traditions. This interaction adopting familial models makes children feel secure and becomes a personal, family and learning community for children and grandparents. At the same time, it transmits values and traditions.

Some parents from multicultural families at *Miwon Elementary School (Korea)* volunteered and helped with the delivery of multicultural education. The volunteering parents played an assistant teacher role in classes demonstrating their own first languages and introducing their cultures.

Peer teaching

Fellow learners sharing teaching roles with adults is commonplace throughout the case study sites. This is in part a characteristic of the prevalence of mixed-age learning in the study but mentoring relations may also be a way, as in the Catalan example that follows, of bringing together learners who otherwise would be unlikely to get to know each other as part of building social capital within the learning environment.

There is a mentoring system among students at *Instituto Escuela Jacint Verdaguer (Spain)*. At the beginning of every school year, the pedagogic team sets the mentoring partners for that year as a way of bringing together groups and students who, otherwise, would not have contact with each other. Mentoring contributes to building social capital within the school, as each student is the mentor to another. They help each other (for example, older students read stories to the younger ones), share their artistic creations, send Christmas cards, visit each other, and so forth. A special bond grows between mentor and mentee throughout the year, and the ties often continue when a student moves on.

In addition to this mentoring system among students from different groups and grades, learners are also paired inside each class when the educational activity permits it: for instance, paired reading, problem resolution or co-operative work. A more skilled learner thus becomes mentor to one who has more difficulties in a specific area; someone can be a mentor in one area or task and a mentee in another one.

In the *Presteheia: Age Mix and LP Model, Kristianssand (Norway)*, much emphasis is placed on providing students with experiences of mastery by allowing them the opportunity to teach other students, both in mixed-age classes and in collaboration with the on-site day-care centre (e.g. students arrange reading sessions for the younger students in the centre).

At the *ImPULS-Schule (Thuringia, Germany)*, the learners can experience the value of co-operative support and reflect their personal benefit for learning by teaching.

> We work (in the 5th and 6th grade) together. If the pupils of the 5th grade do not understand anything, the pupils of the 6th grade can help. So we pupils of the 5th are well prepared for the next year. ... You can also find new friends. (Pupil, 5th class level)

During and after lessons, older students at *Jenaplan-Schule (Thuringia, Germany)* take responsibility for younger students, and vice versa. This is not only due to the mixed-age learning groups (*Stammgruppen*) but is also reflected in the choice and realisation of the instructional and leisure time offerings, as well as in the student assessment evaluations.

A central concept of the learning in the *Community of Learners Network (British Columbia, Canada)* is that learners need to be put to work as resources for each other so that various forms of peer coaching have emerged. Peers play a vital role in offering feedback for each other in formative assessment, and various versions of multi-age coaching have offered students multiple opportunities to support the learning of different cohorts of students. Older and younger students are often gathered together to teach each other and learn from each other – even beyond the bounds of their own schools. This has proven to be a significant factor in building the confidence of older "vulnerable" students, who benefit immensely from opportunities to be viewed as knowledgeable and capable by their younger peers.

The *Gymnasium "Prirodni skola" (Czech Republic)*, has established such a "patronage system", where students from the upper levels give lectures to the younger ones under the supervision of a teacher. Also during research and art projects, more experienced students are expected to take responsibility and practice team leadership at this school, when they teach their less experienced schoolmates.

These examples might equally have been given as illustration of how successful the cases have been in realising the first of the "learning principles" on enhancing engagement and making learning the central priority of all other activities. Having to teach and show others is a highly effective means of learning oneself. Yet, like many of the other approaches, innovations and pedagogies described in this volume, it is more demanding on teacher professional repertoires of orchestration, as underlined in relation to the *One-room School, Gesamtschule Lindental (Switzerland)*:

> The concept of "learning through helping others" is not only demanding for the pupils but for the teachers as well, since they have to be multi-tasking most of the time. For example, when they introduce new learning content to one group of pupils they still have to monitor the pupils doing group work to determine whether they are really working on the assigned tasks or whether they are fooling around.

Concluding summary

This chapter complements the focus on learners in the previous chapter by looking at how the project cases have innovated the other basic ingredients in the pedagogical core – **content**, **resources** and **educators**. These basic ingredients do not by themselves determine the nature of the learning environment and of outcomes as there is no guarantee that these elements will then be used effectively and innovatively. But at the same time, rethinking the content (the what?), the resources (with what?), and the educators (with whom?) offers many ways of changing learning environments, as richly illustrated in this chapter.

Innovations of the **content** of learning are about addressing the knowledge, competences, abilities and values that are developed in the learning environment. This chapter has looked at this through two different lenses. First, many of the ILEs have sought deliberately to develop the so-called "21st century competences", including social learning. Second, there are many examples of innovating specific knowledge domains or subject areas, three of which have been singled out in this chapter – interdisciplinary programmes, languages and multi-cultural focus, and sustainability: "21st century content" as well as skills and competences. The section concludes with the positive finding that the case study innovations reported little constraint in their system curriculum requirements even if they frequently went well beyond what was actually required.

The innovations in **resources** covered in this chapter refer to digital resources and technology, on the one hand, and facilities, infrastructure and learning spaces, on the other. Exploiting digital resources and, in some cases, creating virtual learning environments are features of several of the cases. Using technology helps access the key 21st century skills, uses the media that are commonplace for learners in their activities outside school, and may enhance equity of access for potential students who might not otherwise have such an opportunity.

Many of the practices in the innovative learning environments go hand in hand with a more open and flexible use of space, informed by particular models of how learning should be organised, but also the aim is to open up and "deprivatise" educational spaces, creating visibility and breaking down the close association between a particular learning space and a single teacher. But personalisation may also sometimes call for personalised spaces.

Innovating through **educators** is not only about doing new things or teaching in innovative ways; the options available to the learning environment can also be extended by bringing others into the educator profile, with their particular experiences, and knowledge, and contributions. Bringing in different experts, adults or peers to work with or act as teachers is routine in many of the project innovations.

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Chapter 4

Innovating dynamics within learning environments

This chapter analyses four dimensions of organisational dynamics that relate the core elements: regrouping educators, regrouping learners, rescheduling learning time, and changing pedagogical approaches and their mix. There are different rationales given for team teaching: collaborative working, opening up more pedagogical options, and to ensure attention to certain groups of learners. The learner groupings include departures from standard age-grade combinations, and smaller group units to create a greater sense of belonging or to allow parallel distinctive approaches. Many of the cases use time flexibly, which may mean individualised learning plans or using virtual settings that depart from the requirement of learning at fixed times. Regarding pedagogies, this chapter focuses especially on inquiry and collaborative work and tech-rich approaches (use of film is a prominent feature of many of the innovation sites). The chapter stresses how important are mixes of pedagogical approaches (including direct teaching), not single methods or single technologies.

Introduction

Innovating the elements of the "pedagogical core" – the content, the digital and physical resources, and the profile of teachers – goes hand in hand with organisational relations and dynamics appropriate to transform such innovations into powerful learning for the 21st century. In many cases this means to rethink the kinds of organisational patterns that deeply structure schools – the single teacher, the classroom segmented from other classrooms each with their own teacher, the familiar timetable structure and bureaucratic units, and traditional approaches to teaching and classroom organisation. This is not to suggest that schools in general across OECD countries closely fit the traditional stereotypes: they already depart from them in countless ways – more in some systems than others. But this chapter outlines how the ILE project innovative cases have systematically rethought many of these practices. The result is less to totally transform the organisation of learning so that it is unrecognisable but to develop more complex, flexible arrangements that accommodate the demanding aims that learning environments are today striving to achieve. We examine four dimensions of organisations dynamics: regrouping educators, regrouping learners, rescheduling learning, and changing pedagogical approaches and their mix (see Figure 4.1).

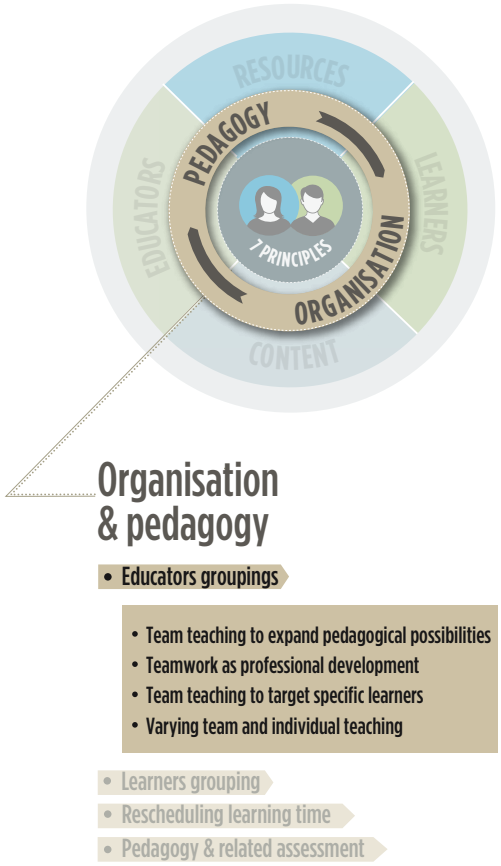
Figure 4.1. **The dimensions of organisational innovation in the pedagogical core**

Regrouping educators and teaching

Team teaching opens up different, more varied options than when the learning environment sticks closely to the conventional format of one teacher for each group of learners. The individual model – the single teacher in his or her class – has had a profound impact on educational and everyday thinking, but it can be very limiting. The cases in our study experiment with a variety of different ways of grouping educators to open up different possibilities for the learning and teaching.

Three main reasons emerge in the case studies behind the strategies for regrouping teachers. First, there are the benefits of collaborative planning, working together, and shared professional development strategies i.e. teamwork as an organisational norm. Second, teamwork opens up more options to vary the pedagogies in play, though this tends to go hand in hand with collaborative planning and professional development. Third, there is teamwork so that certain groups of learners might get particular attention that otherwise is more difficult or impossible when the single teacher is in exclusive charge. These are by no means mutually exclusive and two or all three of these reasons may lie behind a particular change towards team teaching. The three usefully distinguish, however, the key rationales and purposes in moving away from the standard individual models.

Figure 4.2. **Rethinking the ways that teachers and educators work together**



So far does collaboration go in certain of the cases, that it might be described as part of the general culture of the learning organisation:

> Teaching teams are cross-curricular and complementary at *Lakes South Morang P-9 School (Victoria, Australia)*, with team members planning and teaching together, as well as coaching one another. To support this, a collaborative data storage system is available for sharing documentation, assessments, etc. Experienced team teachers also engage in coaching other teachers on various teaching approaches that cater to different learning styles. This collaborative relationship among teaching staff contributes to a cycle of constant professional learning.

Lobdeburgschule (Thuringia, Germany): Already 20 years ago, the teachers initiated teamwork as a structural element. Organisational and pedagogical themes, as well as learning and working forms are discussed in the teams. They established the morning circle, social and open instructional designs, co-operation and a large range of offers, in the early 1990s.

Prior to the innovation described in this case study, the teachers in *Mordialloc College (Victoria, Australia)* were "teaching to the text", according to the assistant principal, within single, closed-door classrooms. This has changed so that now teachers open up their classrooms and work in teams of teachers to model and share good practices – not only with their colleagues, but also with students and the broader community.

Collaborative planning, orchestration, and professional development

The collaborative process of team teaching organically encourages informal reflection and feedback, but it can go further to structure regular collaboration and professional development and act as a powerful tool for recording, learning and sharing good practice. This is very much in line with what Resnick and her colleagues (2010) mean when they talk about the need to develop and support "professional learning communities" for teachers, which aim at collaboratively analysing the pedagogy and content of a lesson in order to continually refine practice.

Professional learning is a priority in *Community Learning Campus (CLC), Olds High School (Alberta, Canada)*. Much of the professional learning is embedded in daily activities such as team teaching, curriculum builds (multidisciplinary teams of teachers working collaboratively on designing an integrated, multidisciplinary study), collaborative lesson planning, and team meetings. Teachers also attend district and school scheduled professional learning days. The principal summed up professional learning as part of "deprivatising" teaching:

> With all my teachers, if they don't collaborate with each other, if they don't learn together, if they don't de-privatise their classrooms, then we won't be able to reach the level of deep learning and engagement that we are striving to achieve. It takes everyone working together all the time, learning together every day.

More than 20 teachers participate in the E-classroom project in *Internet Classroom, Kkofja Loka Primary School (Slovenia)*: teachers who lead classrooms from the 1st to the 5th grade and different subject teachers (mathematics, physics, chemistry, music education, technical education and technology, history, English, geography, civic education and ethics, computer science). Each is a leader (tutor) of an e-classroom in his/her subject area. The teachers work in teams and equally contribute to the development of the team teaching.

An important aspect of *CEIP Andalucía, Seville (Spain)* is the collaborative work of both teachers and students. Adults in the school (teachers, families and volunteers) are organised into working groups, commissions, meetings, the Teachers' Assembly, etc. This teamwork culture is present inside the classroom, where it is frequent to find several adults working together in the same class. This is innovative practice in the Spanish education system. As they tell it, what they do is not only teaching together, but professional and personal learning in groups.

An important aspect of teaching within *Royal Children's Hospital (Australia)* is that teachers need to reflect upon, document and share their teaching practices and learning outcomes with each other. Regular small team, and larger whole-group meetings and forums are held to encourage this practice.

The teachers at *Jenaplan-Schule, Jena (Thuringia, Germany)* regard themselves as a real team. They see the teamwork as their task to produce pedagogical progress. A culture of learning and working has been developed at the school which has led to intensive co-operation with regular meetings, such as team conferences with teachers from all classes/grades. In the weekly team meetings, the teachers collect important topics for the upcoming week-plan and develop the subject matter, materials, and methods.

Collaboration and team teaching are essential for the three lead teachers to create and run such a multi-faceted programme as *Saturna Ecological Education Centre (British Columbia, Canada)*. They meet 3-4 times per year, face-to-face, but they email one another daily with lesson plans, updates and student concerns. Teachers also meet at least once a month through video conferencing. They provide feedback to one another in order to improve teacher delivery of instruction. Each Ecological Education Centre teacher is a lead teacher one day per week for their chosen lesson and responsible for creating and sharing that to their Ecological Education Centre teaching team, as well as being active and supportive more generally to this innovative approach.

Regrouping educators to open up different mixes of learning and pedagogy

The line between collaborative planning and pedagogical mix may often be a fine one, and one of emphasis as much as of practice. Yet, the distinction is worth making as several of the case studies refer to team teaching allowing different approaches to be used with a large learner group simultaneously by judicious use of two or more educators working in tandem. It is worth underlining that small is not always preferable to large – the large group may sometimes be taught together in lecture mode, to be complemented by other styles and groupings, and this may afford options that the uniform single small group does not.

The large, open spaces in *John Monash Science School* (*Victoria, Australia)* affords teachers choice in the ways of enabling group work, and working with different class sizes. Advantages were also seen in large class groups and how they can be organised:

> We actually don't have walls in our classroom. We block classes together ... for example, in Issues Studies we have 75 students with three staff members which means we can then break those groups up into a whole range of different environments. We can divide them based on ability, interest, or just randomly. And so that also gets students to meet and work with other students. (Teacher)

Instead of adhering to one teacher for a thirty-student classroom, in certain subjects the *Cramlington Learning Village (Innovation Unit, United Kingdom)* features two teachers for a sixty-student classroom. This adds flexibility to the timetable and allows teachers to split into groups in any way that suits their needs – such as for parallel or differentiated instruction. It also allows them to run cross-disciplinary sessions, such as an enquiry facilitated by a science and media teacher. The result is that teachers across many disciplines can build

flexibility at no extra cost. The process of team teaching can also help to model and release the creative energies of collaboration, resulting in new and novel ways of orchestrating learning that are engaging to learners.

The role of the learning guides is quite different from that of a single-classroom, single-subject secondary teacher. Teachers at *Mordialloc College (Victoria, Australia)* plan and teach as part of groups of five and require training in Quality Learning principles and strategies. To foster their practical application, individuals and teams of teachers present new ideas, strategies and methodologies derived from these programmes in weekly, two-hour professional learning workshops.

In many instances at *Courtenay Gardens Primary School (Victoria, Australia),* neighbouring classrooms benefit from removable petitions that enable teachers to work together collaboratively with students. In a Grade 2 classroom observed, the whole-class direct teaching alternated: one teacher took the lead in tuning students into the text type that was the focus for their learning, the second teacher modelled the writing practice.

In the *CEIP Andalucía, Seville (Spain)*, students are brought together in heterogeneous groups (ethnicity, gender, motivation, performance), with the aim of motivating the students, encouraging them to help each other, and helping them to better understand the learning process. The whole class of students is regularly divided into small interactive groups of four or five students. The lesson comprises activities that each last 15 or 20 minutes, and are accompanied by a teacher or another adult. Once the time devoted to one activity has finished, the adults rotate to another group, so that they spend some time with all the groups every lesson. Each group carries out a different activity, but the general subject matter of all activities is the same.

An important resource of *Europäische Volksschule Dr. Leopold Zechner (Austria)* is the possibility of team teaching in almost all lessons. They stay together in the classroom and undertake various tasks. A very special resource of the school is the high number of native speakers in the languages of migrants. As the principal explains: "when I came to this school I went to my inspector and said: 'I need teachers who speak migrant languages as well as German' ... and the inspector agreed."

Two teachers are responsible for every class at *REOSCH (Bern, Switzerland)*, each of them taking care of one half of the class by establishing a close relationship with the respective pupils in the individual weekly coaching interviews. In many cases, the teacher-pupil relationship takes on a special quality because the teachers also act as mental trainers or martial arts trainers.

Team teaching to target specific groups of learners

The third main reason identified in the case studies for team teaching is to facilitate the learning of specific groups of learners who otherwise would risk to be neglected in a whole-group setting. Several of the cases report this.

Our observation and videotapes demonstrate how two teachers in the classroom *Europaschule Linz (Austria)* can permit a more personal level of attention. For example, one teacher concentrates on the subject matter and explains tasks, while the special educational needs teacher primarily focuses on social issues, supports group-building processes, and attends to those who need special

attention. Several learners made positive remarks about the team-based teaching approach, such as: "you raise your hand, and somebody is there right away." One even explained how it helped to facilitate a differentiated teaching and learning process: "One teacher is there for advanced students and another for those who need more time." (Researcher)

Similarly, in the *Hauptschule St. Marein bei Graz (Austria)* students are taught in mixed-age integrated classes, including some students with special needs. Instead of streaming students into ability groups, teacher teams apply within-class differentiation, alternating between basic teaching for the whole class and add-on content for highly motivated students or extra support for less motivated students.

Three to five teachers work with *Dobbantó (Springboard) (Hungary)* students on an on-going basis, and two of them are present together in the classroom for 40% of the time. Generally, there are three teachers working with the group on competency development and processing the modules – responsible for humanities, natural sciences and a vocational field, respectively – with at least one of them having experience in teaching students with special educational needs.

Instead of taking students out of the classroom in *CEIP Andalucía, Seville (Spain)*, another teacher joined the class during the two daily hours where flexible groups were organised. An improvement in results was evident in the end-of-term analyses of that year: conduct disorders decreased, co-existence and the academic performance of students of the lower level groups improved, and knowledge was consolidated.

Increased visibility

Visibility is a recurring theme in this report, echoing the title of John Hattie's meta-analysis review (Hattie, 2009) and consistent with our focus on environments as wholes into which all become an organic part rather than segmented, compartmentalised organisations. Enhanced visibility is implied by the very concept of team teaching as the work is literally shared; the visibility is enhanced still more when this becomes organisation-wide rather than specific pairings of educators sharing a particular course.

Team teaching is an integral part of the *Mordialloc College (Victoria, Australia)*. Teachers have had to adapt to a new teaching environment with more students and fewer walls than the conventional classroom.

A teacher at *Mevo'ot HaNegev (Israel)* reported: "The walls of the class have become more transparent. It means we know what is happening in the classes and understand that commotion does not necessarily mean disruption, but activity. There is more openness, more flow and we are more familiar with what is happening between teachers and learners in general at the school." (The researchers add "Most teachers see this positively".)

Watching and visiting classrooms by the Head of the Academic Department is a common practice at *Instituto Agrícola Pascual Baburizza (Chile)*. "We work here with an open doors system, which is something very unusual for high schools in Chile and we see how the Head of the Academic Department is supporting us during our lessons". (Teacher)

The *Community of Learners Network (British Columbia, Canada)* instigated and facilitated a process through which teams of educators enquire into an aspect of their practice and showcase their results to other educators within the organisation.

The *John Monash Science School (Victoria, Australia)* teachers identified the benefits of "knowing what others are doing" and therefore learning from one another, as well as "having a stronger sense of what the students are learning" and the ways in which richer connections could be made between different areas of learning. This was a new way of working for teachers, traditionally used to closed-off private areas and personal desks.

The Distance Learning Classroom in *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* enables the students to learn from their counterparts of different schools, and the teachers to carry out lesson observation and sharing among their peers who are not physically "on site". The Smart Classroom is an advanced technological classroom which allows the teachers to teach using a wide variety of media. It also serves as a live link with other partner schools.

The openness and flexibility of the building design and its purposefulness in developing a learning community at the *Australian Science and Mathematics School (South Australia, Australia)* is described by a member of the leadership team as follows:

> [T]here was very much that culture of a whole school learning environment. The teacher offices being so open and accessible ... to be able to easily observe each other's teaching. [It's about] the deprivatisation of teaching. The community where people worked together to improve learning outcomes for students was a very strong driver. ... The whole concept of learning commons. ... And to move between those spaces as they needed to and between those learning commons and the studios ... there's glass ..., you have windows that overlook the studios and the learning commons open up that line of sight. So the whole thing is really open so that everyone feels a sense of belonging to a community where you focus on learning.

Enhanced visibility may not always be easy, however: the individual teacher closing the door and conducting his or her class away from the stare or scrutiny of colleagues might certainly be easier than sharing practice in a much more explicit way. This was expressed as "taking its toll" in one of the case studies.

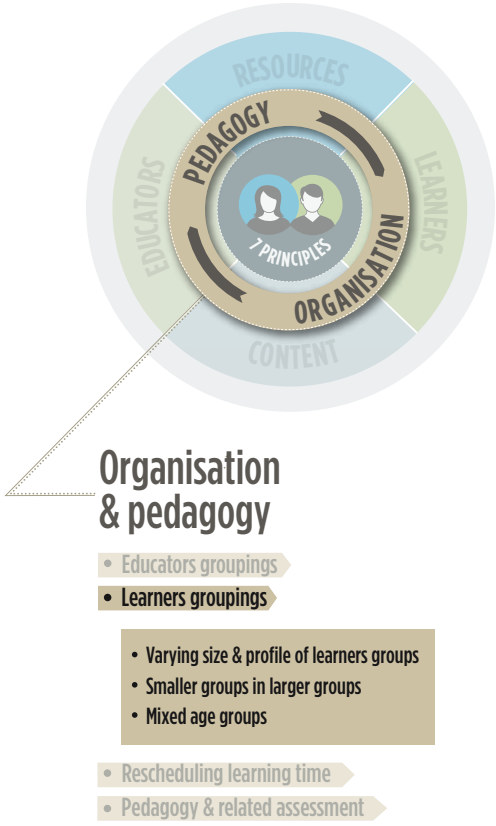
> There is a heightened sense of visibility for teachers working in at *Mordialloc College (Victoria, Australia)* which can take its toll on the staff involved. There is also a possibility that the practice, along with the Centre's multiple levels of participation in Department-led research or funded development projects (Leading Schools Fund, Building the Education Revolution, Building Futures Program, Web 2.0 technologies, Equity case study, ILE (Innovative Learning Environments) Immersion Pilot, OECD horizon scan) may add to this pressure.

How far it is the visibility *per se* that was responsible for the sense of pressure is an open question, or one of the other factors mentioned, or the recognised phenomenon that innovation brings disruption before it is embedded and integrated into accepted organisational practice. These are all questions for leadership and educator professional development to address, as discussed in the next chapter.

Regrouping learners

One of the most common ways in which the case study innovative learning environments regroup learners is by flexibility about age grading, with deliberate strategies for mixing older and younger learners together. In some cases where the school is very small such mixing is inevitable, and there is a separate discussion of their experiences later in this section.

Figure 4.3. **Rethinking standard practices for learner grouping**



Mixing up learners of different ages

There is a variety of reasons offered by the case study learning environments for mixing up ages in the learner groups: as a stimulus to learning; as a way of encouraging diversity and contacts that otherwise would unlikely occur; of role playing including in peer teaching; and of reducing bullying and fostering good social relations.

> An important way of organising learning and teaching at the *Jenaplan-Schule (Thuringia, Germany)* are the mixed-age learner groups which offer clear advantages. School beginners grow starting from the first school day into an already existing group tradition. They can be involved socially in various ways. The students who remain in the family group take over new responsibility and communicate traditions to the younger students. New friendships can be developed and many natural learning situations are created:
>
> > For me the most important aspect of student learning in mixed-age groups is that this kind of learning gives the student a learning "push". It always

> leads to success. The children gain a lot of strength from this success, and it is also true for those learning areas where they are not as capable. These learning boosts, kindled by these successes, are irreplaceable. (Teacher)

Mixed-age groups are an important element of the pedagogical concept of the *ImPULS-Schule (Thuringia, Germany)*. Learners in mixed-age groups have heterogeneous competencies and abilities but this heterogeneity is not perceived as a disadvantage but rather is an important condition for the lesson and school development.

The *Institut Beatenberg (Bern, Switzerland)* reduces the number of students in the mixed age groups from 25-30 students to 10-15 students for the subjects German, mathematics and English, with the aim of being able to better accommodate individual learning needs during these lessons.

In the *Lisbjerg School* (*Denmark)* there are two large mixed-age groups of three years each (6 to 9 or 10 to 13). The students are also organised into smaller groups of 12 pupils, which are also mixed in terms of age. Teaching is differentiated and alternates between work within the bigger and the smaller groups. Every student follows an individualised learning path (called "the child's storyline"), and documents work in different portfolios.

Beyond the social aspects of the positive multi-age student-student and student-teacher relationships, many learners at the *Australian Science and Mathematics School (South Australia, Australia)* highlighted the benefits in terms of improved learning, with representative comments being "everyone's accepted ... everyone's here to learn. ... It's a really supportive environment. ... You can go to any other teacher [... and] you get that individual 1:1 ... you want to learn more" and "learning [is] so much more enjoyable ... and it's something you look forward to, coming to school."

In the *Community of Learners Network (British Columbia, Canada),* teachers are manoeuvring within and between the walls of the traditional structures of the school system to create innovative approaches to teaching and learning. For example, in Elementary (K-7) classrooms where students are placed in cohorts based on age, teachers are collaborating across grades to provide multi-age experiences for their students. They have shifted the physical structures and the learning structures to enhance collaboration between students, and they have shifted the power structures to include students as key resources in the learning of their peers and their teachers.

In the *Presteheia: Age Mix and LP Model, Kristianssand (Norway)*, learner groups vary in age and size but tend to count between 33 and 54 children. Time in the large mixed groups is used to build relations between children who otherwise would not socialise, which reduces bullying at school and increases feelings of security and confidence. It also makes it easier for students to find someone with whom to have a trusting relation because they can choose among more students. The role of teachers and other staff is deployed flexibly.

Not all the cases favour mixed-age groups, and some deliberately avoid it in favour of single-age grades:

Courtenay Gardens Primary School (Victoria, Australia) encourages student groupings and specific teaching strategies to encourage co-operative learning are emphasised. Where possible, classroom groupings are organised with single-year levels rather than in multi-age groupings, as it makes it more "seamless in the ways that curriculum can

be organised across the whole-school" (assistant principal) and "far less complicated for teachers who might have to cross levels" (literacy co-ordinator).

Very small schools

Among the project cases, there are very small schools with mixed-grade classes in Boll (Switzerland). These schools form a network of classes including students of several grades because they serve a very small catchment area. They intentionally use the heterogeneity of their students as a pedagogical basis for an individualised education aiming for integration and autonomous learning.

The comprehensive school *Gesamtschule Schüpberg (Switzerland)* is a small school with a multi-grade classroom with students of varying cognitive and physical abilities. The school lays particular emphasis on the heterogeneity of the student group, and regards the heterogeneous student body as a stimulating and motivating influence on the children's social and cognitive development. Activities are adjusted to the development of the individual child and accumulation of children in problematical phases is avoided. A tutor system in which children learn to teach each other enables the children to experience different roles, and to reduce stigmatisation.

The *One-room School, Gesamtschule Lindental (Switzerland)* is where all 20 students from grade 1 to 9 are placed in one mixed-age class. Although students are assigned to a certain grade, learning activities are flexibly adapted to their current level of development, challenging the gifted students as well as fostering the self-confidence of weaker students. Since this instructional format entails that the pupils are not confined to working alone at their desks, there are always pupils who are moving around the classroom during classes. As long as the noise level doesn't get too loud, this is actually considered to be a positive aspect of learning in a mixed-age group. Also, by deliberately seating lower grade pupils together with upper grade pupils at the same desk, it is often not necessary for them to get up and walk around to ask someone's advice on a learning task.

Smaller groups within the larger groups

Several of the innovation sites operate with a "house" system in order to introduce a manageable organisational unit and to offer a more human or "family-oriented" engagement by the learners.

At *Mordialloc College (Victoria, Australia)* Year 7 Learning Centre, five "family" groups of approximately 120 Year 7 students and their five "guides" (teachers) share the specially constructed flexible space.

At *John Monash Science School (Victoria, Australia)* the vertical house system nurtures more intimate relationships between smaller groups of students and key staff members. Each of the four house group has an appointed Head of House, and the teaching staff members within the house are referred to as "tutors".

Subscribing strongly to the principle that learning is a social endeavour *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* is both physically and programmatically organised into four learning communities, called "quads". The quads provide a range of learning settings for a wide variety of groupings and configurations. The quads are each named according to a colour:

Red, Green, Blue and Gold. In the Red Quad are the Grade 9 students. This is the only quad that contains a single grade. The remaining three quads are a mix of Grades 10, 11 and 12 students. Students remain in the same quad, with the same group of teachers, throughout their three years in high school.

A key part of the collaborative environment is the *Australian Science and Mathematics School (South Australia, Australia)* Tutor Group Programme, with each student being a member of the same multi-year Tutor Group for the duration of their time at the school. The Tutor Group meets daily for a 40-minute period of time. A key role for the Tutor Group is to "ensure that students feel a sense of belonging within the school" and to "provide care and guidance through strong student-teacher relationships".

Breidablikk School (Norway) combines a traditional track, Frøy, which has a regular pedagogy with a second track, Frigg, in which the pedagogy is more adapted and more practical, based on choice between four fields of interest (six times a year, and each time for one week).

At *Colegio Karol Cardenal de Cracovia (Chile),* the unit is not the "house" or "family" or "quad", but the ministry as in a national or regional government:

Karolganigrama is the school organisation chart and establishes the authorities that exist inside the Ministry. In each ministry are the following positions:

- Student Minister,
- Counsellor teacher,
- Parent Minister,
- Chiefs of communal Departments,
- Mayor of the class,
- Deputy Secretary.

The "president" is elected by political campaigns at the voting boxes, including election monitors. The child who gets the largest majority becomes president of the school government, with the child getting the next highest votes becoming the Secretary-General of the President.

Co-operative learning is a prominent feature of many of the innovation cases and in some this is more formalised with the establishment of learner groups that are considerably smaller than the houses or tutor groups referred to above. In the case of the Hong Kong school, there is a deliberate strategy of mixing abilities in the small working groups.

Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China) has restructured all classes in primary 1-6, divided students into small groups, normally with 3 to 4 group mates. Those are heterogeneous groups formed according to their academic performance. Each group is made up of more able and less able students. The heterogeneity of the groups enhances co-operative learning in which students work together to maximise their own and each other's learning.

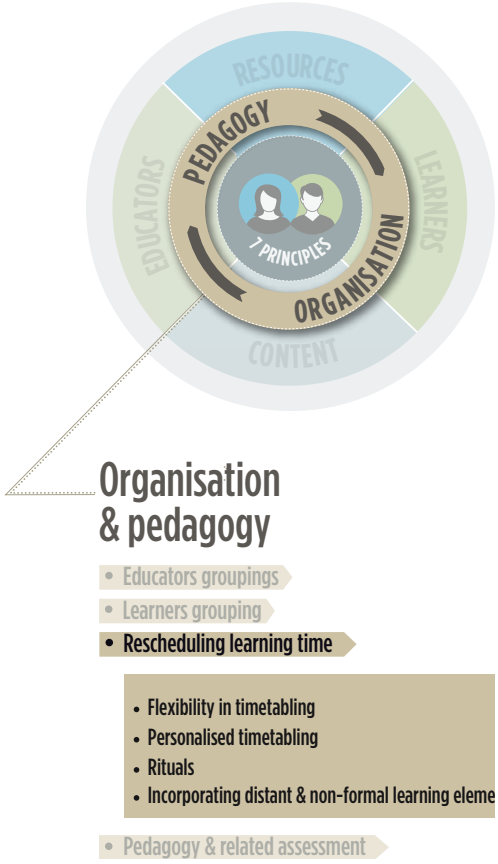
Mevo'ot HaNegev (Israel) operates with a projects-based pedagogy, with projects taking place around a specific problem or question that can be theoretical, practical or both. The learners divide into workgroups of 3-4 each, and then examine a topic or a sub-topic from the wider subject.

How the innovative learning environments use project-based approaches is discussed later in this chapter.

Rescheduling learning – innovating the use of time

Many in education continue to view time primarily in quantitative terms, i.e. as something to have more or less of with learning seen as a direct function of devoting more time to it. Our focus instead is on innovative ways of using time – which is altogether a more qualitative matter. (See also OECD, 2011.)

Figure 4.4. **Rethinking learning time**



Timetables, flexibility and time use

The distribution and planning of activities over time is a very familiar part of school life. Schedules importantly structure the school day, week or cycle; the school "timetable" provides a central organising tool in schools the world over. A number of the project innovative learning environments have moved in the direction of organising learning into fewer, longer periods, partly for reasons of greater flexibility but particularly in order to enhance the opportunities for deeper learning.

> *Mevo'ot HaNegev (Israel)* has a shorter school week (5 days) and longer lessons (60 min) than is customary in Israel, to allow deeper engagement of the students during the lessons. The number of subjects a week was reduced from 8 to 4 – 5;

the relationship between teachers and learners became more personal; learning is oriented towards performance for understanding, studying becomes more personal and autonomous while the teachers accompanied, mentored and supported the learners.

From the 1st to the 4th grade, pupils at *Lobdeburgschule (Thuringia, Germany)* usually work in 90-minute rhythms, while in the 5th to 10th grade they are able to work more autonomously.

Every day except Wednesday at *John Monash Science School (Victoria, Australia)* begins with a fifteen-minute tutorial group meeting. The timetable of the school operates on a four-period day, and a ten-day cycle. Each period is 75 minutes in duration so as to provide, as described by the principal, "opportunities for deep learning".

The timetable at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* consists of five 70-minute blocks with 10 minutes between classes. One of five blocks of time is known as Flex Period (flexible period). Students explained they have time to eat and also enough time to work on homework or anything else they might wish to work on. They also have access to a teacher during this time.

NETschool (Victoria, Australia) offers a 20-hour week over four days, with Wednesday as a non-school day. The shortened week allows learners to undertake projects such as work experience, and assists more fragile learners with the demands of study and social contact. Wednesday morning at the centre is a dedicated time for young mothers and other home-based learners to socialise, and to meet their mentors and teachers.

As the innovation sites in some cases move away from the standard subject-based curriculum, it is not surprising to find that this is reflected in timetables:

The way time is organised in Spanish schools is based on subjects. In *Instituto Escuela Jacint Verdaguer (Spain)*, the timetable is instead based on methodology. The three areas into which the curriculum is organised are reflected in students' timetables and the "learning pyramid" in which approximately 25% of the time is devoted to instrumental areas, 25% to personal work and autonomy, 40% to co-operative work, and the remaining 10% to intra-personal work.

The academic year lasts 36 weeks in *Dobbantó (Springboard) (Hungary)* just like in any other Hungarian vocational school, but the daily and weekly schedules are quite different from the traditional system. First, approximately 60% of study time is devoted to general education, and 40% is devoted to developing work-related competences – this latter often making up a very significant portion of the weekly schedule. The structure of teaching days is not traditional, either. Each day starts with a warm-up conversation, followed by familiarisation with the content of the module planned for the day. Teachers may decide to proceed with the modules in an epochal manner. The learning of the modules may be interrupted during the day by a block of exercise or art, followed by the second period of general education and a day-ending group conversation – an important part of which is assessment supporting development.

Flexible choices

Many of the cases use time with more flexibility than is traditionally the case in schools in order to respond to the individual learning needs of their students. Flexibility goes hand-in-hand with individualised learning plans where each learner may be working on something different, as well as with educational philosophies determined to make schooling less bureaucratic.

> The *Europaschule Linz (Austria)* has no school bell, which is thought would interrupt the learning, and teachers start and end their lessons or break a double period when they consider it appropriate.
>
> In terms of timing, the usual sequence of 45- or 60-minute lessons for separate subjects hardly exists. A researcher who visited the *Makor Chaim (Life source), Yeshiva High School (Israel)* described this as follows:
>
>> In Makor Chaim they do not believe in the rigid 45 minute lesson structure. ... It is not a matter of how many words the teacher said or the students said, but whether learning took place. To make that happen one must induce processes similar to those that exist in the real world, where in addition to situations where grown-ups teach the young ones, there are also situations where people investigate, test and study in collaboration with colleagues.
>
> Instead of the 45-minute rhythm and subject-oriented instruction normally realised in the German school system, an open, adaptive form of instruction with regard to variable and individual learning situations is applied in the *Jenaplan-Schule (Thuringia, Germany)*. Thus, individual students receive enough flexibility and free time to work and learn at their own pace during the day and weekly schedule as well as follow their interests, experiences, creativity, and social learning needs. The goal is to have students understand themselves as active and independent learners and who experience the fruit of their efforts.
>
> In the *Discovery 1 and Unlimited Paenga Tawhiti, Christchurch (New Zealand),* students are expected to be at school for six hours each day, but timetables are flexible and start anytime between 8am and 10am, and finish anytime between 2pm and 4pm. In addition, students can negotiate days off site after presenting an "off site learning plan and off site learning record" to their learning advisor and parents. The students choose which classes they attend from rosters of classes, choosing among "toolbox" sessions such as in mathematics, science and English at different levels. Each student's timetable of learning is negotiated according to the identification of his or her current strengths, interests and needs.
>
> In the *Gymnasium "Prirodni skola" (Czech Republic)*, students work with lists of study requirements per subject, but it is up to them to choose the right time for each of them. Possibilities to prove fulfilment of requirements are, for example, a properly-kept notebook or portfolio, teaching aid created by the students, etc. Selected areas of the curriculum are obligatory for all students, but they can decide about when to prove their knowledge and can choose from additional requirements to direct the course of their education.

From the individual's vantage point, however, the requirements of the individualised timing may not actually feel like flexibility but instead be perceived as demanding routines:

At *REOSCH (Bern, Switzerland)* for every half-day the pupils have to copy and specify the appropriate learning goal – i.e. the scheduled task – from their weekly plan. Four columns are available for their schedule, with the following titles: 1) scheduled duration, 2) actual duration, 3) started, 4) completed. In the last column, the pupils note down their reflections on whether and why the task was – or was not – successfully completed in the allotted time. In other words, while the learning content is given by the weekly plan and the weekly coaching interviews, the work schedule and the learning path are in the responsibility of the learners. A task is only completed once it has been recorded in the working journal.

Looking at the longer time perspective of the educational year, some of the project cases have also provided their students with the opportunity to "accelerate" their learning, for which there is also evidence that this may lead to improved results (Hattie, 2009). The students referred to in the following two examples come from opposite ends of the spectrum of educational advantage but in both cases there is recognition of the value of permitting swifter student progress than conventionally foreseen.

In the *CEIP Andalucía, Seville (Spain)*, and contrary to the idea that disadvantaged students need to learn at a slower pace with an adaptation of the curriculum and methodology to their rhythm, the idea took hold that accelerating their learning would enhance school success in both compulsory and post-compulsory education and therefore improve their access to employment.

At the *Australian Science and Mathematics School (South Australia, Australia)*, Year 10 students may study subjects at a year 11- or 12 level, while year 12 students have the opportunity to take even first-year courses at Flinders University as part of their year 12 studies. The school responds to the learning needs of its most motivated and gifted students by allowing them to self-pace their learning and do away with the confines of the traditional school year cycle.

Partly due to the special nature of *NETschool*, targeting learners who might well otherwise not complete the educational cycle, there is flexibility about the time it takes to complete the units and qualifications – whether quicker or slower than might be expected.

In the *NETschool (Victoria, Australia)* there are no given expectations about the pace of student learning in this self-paced learning environment. For example, while some students complete the Victorian Certificate of Education in three years, others might take longer or shorter to complete the learning units.

Rituals in using time

Rituals can help to structure the school day and make it meaningful; they demonstrate that the activities that are repeatedly integrated in the day or week are important, and create routines of reflection or planning. Several of the project innovation sites begin and conclude the school day or week with such a special moment.

In the *Projektschule Impuls, Rorschach (Bern, Switzerland)* the day begins with a "morning circle" when a "speaker-stone" is passed around and the children can talk about their feelings or thoughts. There is a very regular structure of the day. The classes start with a foreign-language session, followed by group work based on learning plans and then a period of absolute quietness, indicated by a sandglass that runs for 25 minutes when the students remain at their place and do not speak or walk around.

In the *REOSCH (Bern, Switzerland)* the weekly learning schedule is mostly determined by the students; however, there are two exceptions that deliberately break the learning schedule of the students i.e. the "mental trainings" and the "martial arts lessons". 2 to 4 times a week in 5- to 15-minute sessions, students take part in mental trainings that include various techniques from concentration to meditation exercises. Also much importance is placed on martial arts lessons (once a week) that are compulsory for all.

Every day at *Mordialloc College (Victoria, Australia)* starts at 8.55 am with all five family groups in their family areas involved in silent reading in groups varying in size between 18 and 25. All students and family guides read silently for 30 minutes.

The Multimedia Program has become central to the *Courtenay Gardens Primary School (Victoria, Australia)*, including "The Morning Show", the CGPS Radio Show and Film-Making across the school. This is run each morning by a group of Senior School learners who apply to do so and undertake appropriate training. It provides the whole-school community with information about their day ahead, transmitted throughout the school at 9.00am on the television in each classroom, the staffroom and in the entrance to the school, from a dedicated multimedia classroom. The show follows a structured storyboard that includes an overview of news around the school including student and staff birthdays, teachers on yard duty, weather, a "maths minute", phone-ins from classrooms, and a film made by students.

Organised learning outside regular school hours

A number of the learning environments in our study systematically structure learning and support for their learners outside the regular hours. There are many more examples than these, as all those using virtual e-classrooms, for instance, have removed the close connection between face-to-face contact and organised learning. Those mentioned here are more the conventional additional programmes to give learners and their parents more flexibility.

In the *Netzahualcotoyotl Primary School* in the community of *Los Coyotes (Mexico)*, the itinerant pedagogical advisor and community instructor engage in significant individual follow-up with students during the lessons, and working with them in the evening as part of the regular home visits.

The Entre Amigos association in the *Polígono Sur* is responsible for organising extra-curricular activities through an official tender process of the City Council of Seville which is renewed every year. From 8am, they are in charge of the "Morning Classroom", organised for those whose parents go to work early in the morning (most of them in street markets). Afternoon extra-curricular activities start at 3pm and finish at 5pm, although *CEIP Andalucía, Seville (Spain)* is normally open for more hours again.

The *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* has launched a number of activities for the students before, during and after school. Those who need to be at school early can join the "Reading is Fun" from 7:15am for most of the next hour whereby students can choose books of different interests to read and share afterwards. Besides the lunchtime activities, students can join the Student Gardener Team to look after the plants in the school garden as well as the community garden during recess. Every afternoon the students

have 40 minutes of self-study to work on their homework and there is also a 2-hour period at the end of the school day for tutorial classes on academic and creative subjects.

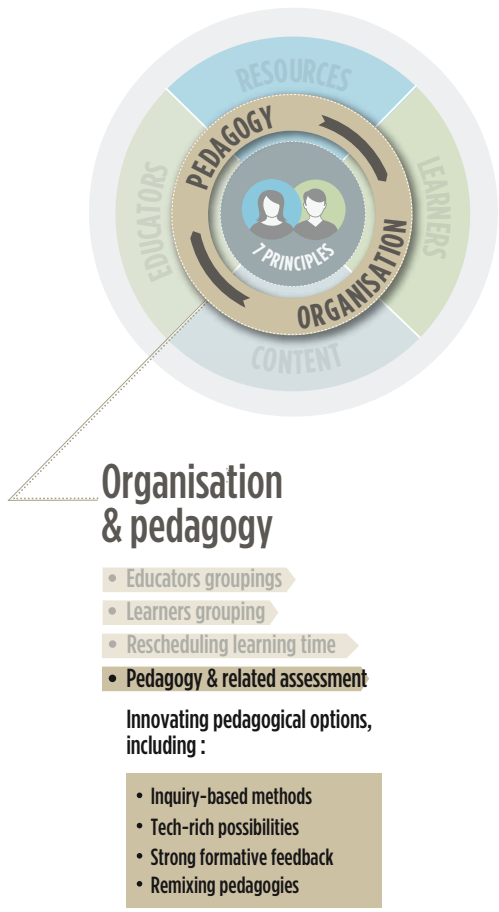
The *Enrichment Programmes, Rodica Primary School (Slovenia)* offers an array of programmes – artistic, research, international, linguistic and social activities – that encourage divergent thinking, constructivist education and diverse paths to knowledge. These complement the regular programme and are offered mostly outside regular lesson time in the afternoon or on Saturdays.

In the *North Union Academic Advancement Opportunities (Ohio, United States)*, students are offered flexible scheduling options, such as early-bird classes, extended day classes, and Saturday classes. High school students can take classes during regular operating hours, early or late, via correspondence courses, and online.

Widening pedagogical repertoires

Pedagogical approaches represent the fourth and (in this chapter) final organisational category within the pedagogical core. The focus is in particular on those pedagogies that especially depend on **inquiry and collaborative** work. Such approaches explicitly prepare students for future learning. They can be linked closely with the innovations described in Chapter 3, especially the content that seeks to develop the so-called "21st century competences".

Figure 4.5. **Innovating pedagogical options**



The possibilities afford by powerful communication **technologies** are also prominent in the pedagogies of 21st century learning environments: in this chapter we discuss both the special approaches that can only be realised through ICT and the way that film is an important feature of many ILEs. The final part of this section focuses precisely on **mixes** of pedagogical approaches – a perspective facilitated by the concept of "learning environment" that relies on the holistic view of how different activities and methods may be accumulated over time – that characterise the cases. Far from the featured innovations being characterised by single methods or single technologies, instead they rely on combinations of approaches.

Innovating through inquiry and authentic learning

Brigid Barron and Linda Darling-Hammond (2010) in their contribution to *The Nature of Learning* (2010) argue that "inquiry and design-based approaches are an important way to nurture communication, collaboration, creativity, and deep thinking". But, they continue:

> Inquiry approaches to learning are challenging to implement. They are highly dependent on the knowledge and skills of the teachers engaged in trying to implement them … Teachers need time and a community to support their capacity to organise sustained project work. It takes significant pedagogical sophistication to manage extended projects in classrooms so as to maintain a focus on "doing with understanding" rather than "doing for the sake of doing". (Barron and Darling-Hammond, 2010: 215)

In many of the project innovative learning environments, the learners engage in project-based learning: students are encouraged to actively construct their knowledge while practising skills like hypothesis generation, scientific inquiry, self-monitoring and (sometimes online) literary analysis. Depending on how widely projects are defined, there may well also be a shift away from subject-specific teaching towards more inter-disciplinary learning that links knowledge and skills from several subject areas.

> The *Jenaplan-Schule, Jena (Thuringia, Germany)* makes a distinction between learner group instruction (music, arts, sports, handicrafts/woodworking, etc. and social studies) and the learner group work, as well as the learner group projects in nature, geography/history, German and ethics/religion. In all learner groups, the project work (occurring for 100 minutes three times a week) is the central working form.
>
> "Problem-Based Learning" (PBL) is an important part of learning work on natural sciences, social sciences, and technology at *Instituto Escuela Jacint Verdaguer (Spain)*. All such work is planned as a team and carried out either co-operatively or individually, understanding problems as activities that have to be completed by finding the best strategy to do so – "doing" and "solving" problems. The organisation of spaces, the timetable, activities, trips, workshops, and so forth are based on this methodology.

As in the nature of addressing problems and projects, step-wise phases are often involved in moving towards specification and solution.

> The project-based research methodology at *CEIP Andalucía, Seville (Spain)* is mainly for work on Knowledge of the Environment. Teamwork, both among students and teachers, is promoted, encouraging an active student role in learning, increasing motivation towards curricular contents and implementing them in a comprehensive way. Project work is an organised and flexible process which consists of a series of

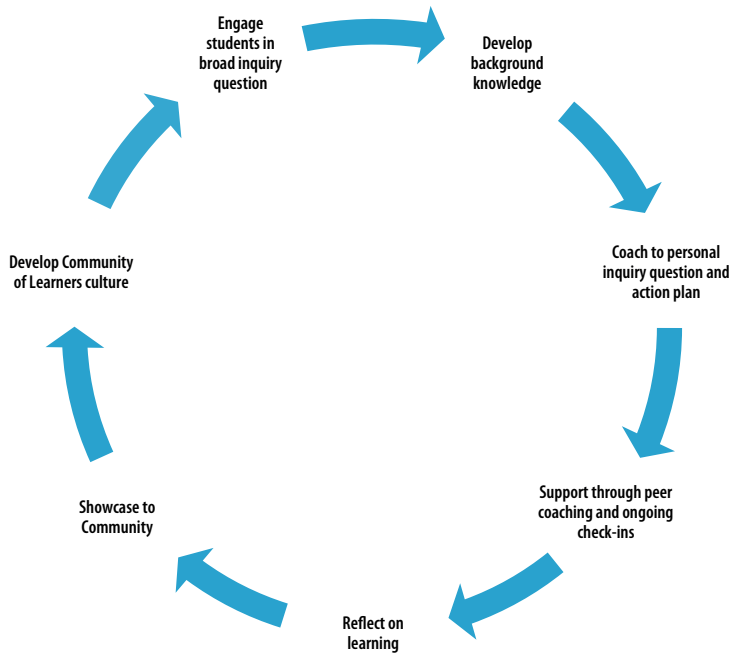
activities structured into different stages: a) Brainstorming and Planning; b) Search; c) Structuring and Communication (it is significant to contrast the results obtained with the earlier ideas the students had included in the classroom mural – the comparison of "what we knew" or "thought we knew" and "what we know now"); d) Evaluation, which is essentially formative assessment.

At *Matthew Moss High School (Innovation Unit, England)*, student teams work one day per week on a research project. The teachers first introduce a challenge, which can vary from launching an egg as high as possible and returning it to earth without breaking, responding to a natural disaster, to investigating family histories of migration. The students then gather information about the topic, write a research proposal, and – after approval by the teacher – conduct the research throughout the school year. In the process, they get the freedom to organise their own resourcing, while the teachers act as facilitators who present in-time lessons or suggest additional sources of knowledge.

The inquiry cycle method used in the British Columbian example formalises the stages into the cycle shown in Figure 4.6.

In the *Community of Learners Network (British Columbia, Canada)*, educators design broad inquiry questions that compass a range of learning intentions. Background knowledge is developed through direct instruction and a series of information gathering collaborative processes such as research, "jigsaw", literature circles, information circles, field experiences and guest presentations. A prominent feature of this phase is a series of "circle meetings" where students learning is co-constructed and facilitated in small groups. Reflective writing and representations of evolving conceptual understanding using mind maps follow the small group meetings.

Figure 4.6. **The Community of Learners Network classroom inquiry cycle**



Source: OECD (2012). Inventory case study "Community of learners network", www.oecd.org/edu/ceri/50301622.pdf (accessed 11 July 2013).

After this phase the students are coached to articulate their own inquiry questions that fit within the larger inquiry question. As they pursue their individual inquiries, they often facilitate learning experiences for their classmates. On-going progress is supported through multi-level feedback circles that rely on self, peer and teacher support. The inquiry process is followed by a celebration of learning called a Learning Showcase where families, fellow students and community members are invited to share in the learning experience. Once the inquiry circle is completed a new one starts following the same sequencing of activities, which allows the students to become more autonomous in their learning and gradually take on more challenging inquiry projects as they progress.

Authentic learning

It is a common feature of many innovative learning environments to make the learning experience authentic and meaningful by engaging students with real-life problems, offering hands-on experiences, and incorporating the students' historical, natural, and cultural environment in learning activities. Central to authentic teaching are realistic "real-life" problems, which are interesting because they are more relevant, complex and challenging than more simplified educational ones.

The *Education for Democratic Citizenship Programme, Colegio Guadalupe (Nuevo León, Mexico)*, aims to develop learners' potential to participate actively in society and to become self-directed individuals, while building and integrating knowledge in diverse content areas from real experiences. Students identify problems that affect their own educational community, and then work on generating, implementing and assessing possible solutions to them. They plan projects based on their own surveys and interviews in their community; choose aspects of the situation to improve, and work out their own ideas to do so with an action plan, following a series of goal-oriented, collaborative activities.

In the *Centre for Studies on Design at Monterrey (CEDIM) (Nuevo León, Mexico),* the college has established co-operation with enterprises and institutions that submit "real-world" projects which student teams then work out – all the way from brainstorming to final evaluation, with instructors acting as counsellors in this process. There are three major steps: Project design, coming up with a plan to bring about the project chosen; Collaborative work – working together to optimise the process and the outcomes; the Evaluation phase, by the teacher, peer evaluation, self-evaluation, and the external evaluation of the external agency that came up with the project proposals.

The three-year practical building and living project at *Breidablikk School (Norway)* includes students building houses on the scale 1-20. They get to occupy the roles of builders, gardeners, electricians, bank employees, real estate agents and several other occupations. In relation to this, the school co-operates with representatives of many different businesses. Pupils employ digital tools used by architects, and houses are furnished with electricity and self-made furniture. All designs should be consistent with a sustainable environment. For this project the school has a formal partnership with local firms.

Work on real-life problems often goes together with hands-on experiences, in which the students get the chance to try out and experience things themselves, thereby increasing the chance that they are able later to put into practice what they learnt. One application of hands-on learning is to bring students in contact with native speakers of languages that

the students learn, so that they can use foreign languages in natural interactions. Contacts are initiated in different ways: by inviting the speakers into the classroom for face-to-face conversations, or with emails and videoconferencing, or by letting students participate in international events.

Hands-on experience may also be had by learners running a small business: producing and selling self-made products or working on problems from external customers. The students naturally gain experience in activities such as marketing, accounting, and customer-service, but also in organisation, co-ordination and team work.

> The *Mypolonga Primary School (South Australia, Australia)* has a student-organised shop, in which the children sell self-made products and products commissioned from the local community to visitors and tourists. All classes are involved in business, craft and tourism, and senior students along with a junior trainee operate the shop one day per week. Students rotate through a series of tasks in the shop and engage in numerous opportunities for authentic learning through oral and written language use, mathematics, art, craft and hospitality.

Authentic learning activities often involve aspects of the children's direct environment, in order to explore the world around them and to accustom the students to the cultural and historical heritage of the place where they live.

> *Liikkeelle! (On the Move!) (Finland)* stimulates the learners to examine everyday settings from the perspective of natural sciences. Activities include investigations of air quality and noise measurements conducted in co-operation with relevant experts and authorities responsible for these issues: students place a measurement device near their school, communicate with a centre for natural science teaching for analysis, process the data and publish results in an interactive map on an online learning platform, where they engage in discussions of the results with both students from other schools and with a wide network of experts and authorities who facilitate the investigations.

> The main pedagogical methods in the *Fiskars Elementary School (Finland)* are learning-by-doing, immersive learning and student-professional collaboration. All the workshops are, to the extent possible, organised outside the school environment in the studios of the artists and handicraft workers of the village, and are directed by handicraft and art professional themselves.

Performance for a "real" audience

Authentic learning often involves several rounds of review and revision toward a polished performance, which may be an exhibition, a stage performance, or a portfolio. When students can present their work to a real audience, it becomes a source of public learning and celebration (Barron and Darling-Hammond, 2010). Working towards a final performance also motivates students to achieve genuine mastery because real audiences demand coherent presentations and a high level of understanding. Presentations are also learning events in themselves, as setting them up involves skills like organising group efforts and communicating effectively with an audience.

> In the *CEDIM (Nuevo León, Mexico)*, students present the projects they have been working on in front of enterprises and public or private institutions – a means through which the assessment becomes much more authentic and meaningful to students.

The Showcase is a celebration of learning that completes each inquiry cycle, and has come to be seen as an essential element of the process at *Community of Learners Network (British Columbia, Canada)*. When a learning Showcase is used as a required element of the completion of the inquiry cycle, it provides an opportunity for a powerful culminating event for the inquiry. Classmates, school administrators, families and community members are all invited to view the products that the students have created, and to discuss their learning with them. In preparation, the learners review all that they have completed during the inquiry cycle and select items that will help others to understand their learning journey.

Mevo'ot HaNegev (Israel) responds to learner diversity by letting students choose projects designed to show and demonstrate their learning. In so-called "performances of understanding", each learner can display his or her learning in a self-chosen form of "performance" that shows how the students understand the project – in their own language, in their own way, and at their own pace.

Europäische Volksschule Dr. Leopold Zechner (Austria) practices a special performance assessment called "commented performance portfolio" up to the third grade: Twice a year the students present their achievements to parents and teachers as a detailed conversation lasting about half an hour. Students present work they have done and answer teacher questions or demonstrate learning through solving problems they feel confident about in front of their parents.

The pedagogical possibilities in "tech-rich" environments

While technology is certainly not essential to project-based work, it can be highly facilitating and a valuable means to get the most from it (Groff, 2013). As Jennifer Groff describes it, when conducting a student-driven, inquiry-based project, technology can provide the **tools** necessary to complete the investigation. Digital cameras and video recorders can collect real-time data, while laptops can offer easy access to online searches and mobile computing. The available toolkit of digital technologies to be used in this way will continue to grow. Technology can offer the **platform** for inquiry-based learning – providing a collaborative working space or mechanism for progressing the work over time – as individual learners, groups of learners, and collectively as a whole class. A Virtual Learning Environment (VLE) is an excellent example of this. Technology can be the **mechanism** upon which inquiry-based learning is built. For example, in game-based learning the game is most often not about inquiry but it provides the storyline or context upon which the project and inquiry are structured. Augmented reality games, online simulations and many other technologies provide similar mechanisms for structuring inquiry-based learning in an engaging, and relevant, way.

Approaches that rely on technology

Engagement and motivation, student-driven learning and inquiry, interactivity and collaboration, personalisation and flexibility, may all be enabled and enhanced with technology but are all possible without it. Yet, some forms of learning rely especially on technology. This is partly about digital resources (Chapter 3) and partly about pedagogical possibilities as outlined below: certain teaching and learning options are not available without a high minimum of technology in use. This, as Mayer (2010) recalls, should still be learner- not technology-driven.

Groff (2013) outlines three such categories of technology-dependent approaches:

Specific Complex Learning Experiences: For example, with new advances in simulation technology, every student can have the chance to dissect a pig's heart – something that would be very difficult in reality. Or, students can investigate the spill of an unknown substance on MIT's campus, as is created by the augmented reality game *Environmental Detectives.*

Distant Communication and Collaboration: Before, student groups were largely confined by proximity – those in the school or local community. Now, learners and schools can easily connect to share information and collaborate *via* free tools like Skype. Or a group of students interested in studying the migration patterns of a certain bird can join an online affinity group and be mentored by a leading expert.

Mobility and Access to Extensive Materials: New technologies are mobile, and free the learner from being constrained to traditional learning settings. Technology now brings access to educational materials and experiences of a richness and kind that previously would not have been possible or accessible only in discrete locations such as a university library.

Film-making and other audio-visual work as vehicles for learning

A specific learning practice that recurs in many of the project cases is film production. Students make films or animations, going through the complete process from idea generation, to planning, storyboarding, and scripting, to production and final presentation.

> The Multimedia programme at *Courtenay Gardens Primary School (Victoria, Australia)* enhances the core business of the school in producing resources, particularly with film making. The students have opportunities to produce any texts they create through film, which are then archived in the school library. Other film making central to the teaching and learning strategies of the school is in the production of "Power Strategies", which are short clips, available to all teachers, describing approaches to assist students achieve success in their learning.
>
> During the film making at *Miwon Elementary School (Korea)* both foreign-origin and Korean students were able to experience quality learning opportunity. The students choose topics of interest for them and their parents. One of the films made portrayed problems arising in a multicultural society and possible solutions. Volunteer students among the fifth and sixth grades participated in making the films. The project was supported by "Changshi", a Korean creative film-making association. Since 2006, these student films have won a number of awards: the Youth Film Festival Award and the 7th Korea Video Award. The students have been invited to a multicultural education seminar and to the 7th Korea Youth Film Festival, and have appeared in newspapers.
>
> The search of contexts to develop self-knowledge includes audio-visual work at the *Instituto Escuela Jacint Verdaguer (Spain)*. The aim is that students understand what happens behind television cameras or a film and that they learn to differentiate reality from fiction. In the upper cycle of primary education and in compulsory secondary education, between the ages of 10 and 16, they do some audio-visual editing in different formats: video, animation (frame by frame) or design (drawing each frame).
>
> In the *Community/School Film Festival at the Manchester Primary School (Victoria, Australia),* the objective is to engage primary school students with the curriculum through experiences of making short films. Filming is used as a cross-curricular

activity involving flexible movement around the school, group negotiation, and is regarded as a tool for students to demonstrate their understanding. Teachers and film technicians support the students, and the project culminates in an authentic film festival, fostering exchange of resources and expertise.

CEIP Andalucía, Seville (Spain) has a radio station, "Radio Abierta Sevilla 99.1FM". "We also do a weekly programme with the students of the 6th year, which is called "OndAventura" (WaveAdventure). The idea of the radio programme is to have a participative space where students can develop linguistic skills: they express themselves, they have to prepare it, write the script ... and it is supervised by a teacher. The radio workshop takes place in a radio station located in the school, which, like all the school premises, is available to the neighbourhood." (Head of studies)

Box 4.1. **Example of film use in the Royal Children's Hospital Education Institute**

Outpatient (RCH) activity needs – short-term, engaging (especially for boys as often activities in this area are frequented by girls), include multiple stages, involve multiple children, varying age ranges (18 months to 18 years).

Objectives:

- to learn about, recognise and distinguish different eras in which dinosaurs lived
- to conduct research into dinosaurs
- to be able to identify herbivores and carnivores
- to be able to effectively communicate ideas within a group environment
- to plan, create and produce a claymation film in collaboration with other students
- to effectively communicate a visual story to the viewer without using spoken words

Approach: Two week implementation. In the first week, children contributed to a Dinosaur book, which included research, facts and their own prior knowledge of dinosaurs, and made clay dinosaurs based on what they had researched. In the second week children used PowerPoint to create a story board for the claymation and then filmed it over a one-day period using a digital camera. The children then transferred the photos to a netbook, inserted them into Microsoft Movie Maker™ and had a premiere viewing of the production on the last day of this two-week activity.

Curriculum areas covered: technology, arts, maths, English and others were demonstrated by the participants through the planning, creation, and production of a film about dinosaurs and how they became extinct.

Source: OECD (2012). Inventory case study "The Royal Children's Hospital, Melbourne, www.oecd.org/edu/ceri/50358701.pdf (accessed 1 July 2013).

Mixes of pedagogies

In a well-designed environment there may well be plenty of occasions for direct instruction as one of a range of methods for introducing and pacing content, to be used in combination with other, less directed approaches … [The] focus on learning environments as patterned mixes of different learning activities that take place in

> context over time facilitates the insight that the learners need to experience a range not a single method or pedagogy. (Dumont et al., 2010: 328)

If this is true for particular classes, it is even more applicable in looking across the longer time spans of the learning day or week or cycle. Diverse learning methodologies and pedagogies are applied, sometimes planned, sometimes in adapting to particular circumstances arising. The orchestration of the learning within the environment is thus highly complex, involving manifold decisions (often by teachers working collaboratively or with the learning leadership) about when and where and with whom particular pedagogies are appropriate and how this should be modulated over time. In all of the examples below, part of the day involves whole-group, teacher-led activity, mixed in with other types of teaching and learning.

In the *Lobdeburgschule (Thuringia, Germany)* a typical week for a grade 1 student starts with the Monday "morning circle" where various topics are discussed. Then, learners work on their individual plans with partners, sometimes with the help of the teacher and using a range of different worksheets and prepared materials for support ("free work"). Then, it is the "epochal projects" session which is project based and on which students work for about a week on a single theme that includes different subjects and topics of the Thuringian curriculum. At the beginning of the project, the teacher provides core information, questions about the theme are developed, and sometimes small working groups are formed. The results are presented at the end of the week. Subject oriented lessons follow but also here the students have much freedom to direct their learning. The school week ends with the group "final circle" on Friday afternoon.

At the *Mordialloc College (Victoria, Australia)* the daily expedition time (11 am-1 pm) provides opportunities for workshops and student conferences related to the substantive curriculum content, as well as embedded aspects of literacy and numeracy. Guides also hold workshops on areas which support the specific needs of students; these are the key point of direct instruction for students and are generally held for groups of fifteen or more students.

In *Europäische Volksschule Dr. Leopold Zechner (Austria)* on the day observed, the circle time was followed by class time in which the teacher went through a whole-class teaching episode, working through a set of exercises and calling on students to answer questions. After the whole class session, students were split into two groups; the higher ability group observed sat in a circle and both groups were introduced to a new chapter of mathematics by the teacher before working through examples, with the teachers providing individual coaching, especially to the lower ability group. This was followed by individual week-plan work which, according to the students, is a major element of their school life. It lists the assignments in German studies, mathematics and science and learners may work on them in any order.

The teachers at *Jenaplan-Schule (Thuringia, Germany)* are glad to have the option to choose between various teaching styles. The coursework guarantees the instruction of mandatory subject contents but simultaneously demands a high degree of development and discovery of individual abilities. Internal differentiation is a central didactical principle.

Teaching strategies used for multicultural education in *Miwon Elementary School (Korea)* during the school subject classes and alternative courses were diverse though more activity-centred classes were offered than teacher-oriented or instruction-based classes.

The "core lessons" are different from the "course lessons" in the *ImPULS-Schule (Thuringia, Germany)*. The core lesson defines the basic concept of the educational plan and the learners deal with interdisciplinary topics in mixed-age groups. The course lessons, on the other hand, aim at fostering fundamental knowledge and through this means are meeting the requirements of the higher secondary education schools that will come next for the students.

In the *Instituto Escuela Jacint Verdaguer (Spain)* regarding three areas (reading, writing and arithmetic), teachers are still regarded as the best source of information for learners and they perform that knowledge transmission function to learners who would not be able to discover core concepts by themselves or in a short time. In secondary education, the researchers observed the way a teacher introduced a new topic with a presentation on the digital whiteboard, looking at all times for the participation of the group. This is one of the moments where the role of the teacher is more traditional, transmitting information: the whole class was paying attention, asking questions and making comments freely, and taking notes on their laptops.

The relative shares of individual work, work in ability groups and plenary work differ for each subject (*REOSCH, Bern, Switzerland*). For example, in German the learning goals for literacy and reading are defined individually in the weekly coaching interview. In contrast, grammar is divided into portions and taught to the class as a whole. For history, plenary work is usually preferred over individual work in order to provide the pupils with an opportunity to exercise themselves in discussion and debate.

Frontal forms of classroom work can be complemented by the e-classroom for acquiring and strengthening knowledge, as well as for assessment (*Internet Classroom, Kkofja Loka Primary School, Slovenia*). Teachers' learning materials prepared in advance are collected in one place within the e-classroom where they may be used directly without downloading. The instruction via e-classroom takes place through an interactive whiteboard and portable tablets. E-classrooms offer the possibility of individual feedback after completed work or activity, with messages or a grade or a knowledge test outlined for the continuation.

The mix of pedagogies in the above extracts is thus both formal and more spontaneous. Even in learning environments that have deliberately sought to move away from conventional forms of teaching and organisation, there are particular subjects where those more conventional approaches are judged to be the most suitable even if, in these cases, the teachers are always looking to encourage active learner engagement. The mix may come through the different media and settings used, as when e-classroom work is integrated into the larger menu of teaching and learning options. The mix may come from teacher preferences and choices as part of the wider orchestration of learning. The point to be stressed is that innovative learning environments have not simply replaced one approach or methodology with another but instead use a wide battery of approaches though in largely deliberate ways in line with the broader strategy being followed (see also OECD, 2012).

Concluding summary

Innovating the elements of the "pedagogical core" goes hand in hand with innovating the organisational dynamics that relate these different elements. This often means to rethink the organisational patterns that deeply structure schools – the single teacher, the

segmented classroom with that teacher, the familiar timetable structure and bureaucratic classroom units, and traditional approaches to teaching and classroom organisation. This chapter has analysed four dimensions of organisational dynamics: regrouping educators, regrouping learners, rescheduling learning, and changing pedagogical approaches and their mix.

There are different, albeit overlapping, rationales given by the innovation sites for their common recourse to team teaching. First, they report the benefits of collaborative planning, working together, and shared professional development strategies to address excessive fragmentation. Second, teamwork opens up more options to vary the pedagogies in play and, third, teamwork permits attention to certain groups of learners that otherwise is more difficult or impossible when the single teacher is in exclusive charge.

The benefits of learning in small groups co-operatively have been stressed in *The Nature of Learning*, and group-work is commonplace in the project cases. The groupings examined in this chapter include departures from standard age-grade combinations, not as grade repetitions but by mixing up wider age groups beyond the single year group. Many of the sites have also introduced smaller group units within the overall learning environment either to create manageable size for learners to acquire a sense of belonging or to develop distinctive approaches for smaller groups of learners.

Many of the cases use time more flexibly than is traditionally the case in schools. Flexibility goes hand-in-hand with individualised learning plans where each learner may be working on something different, as well as with educational philosophies determined to make schooling less bureaucratic. Virtual settings contribute to breaking the notion that learning has to take place at a fixed time, as well as the deliberate organisation of teaching and learning outside the standard hours. Rituals can help to structure the school day and make it meaningful; they demonstrate that the activities that are repeatedly integrated in the day or week are important, and create routines of reflection or planning.

Pedagogies obviously represent a fundamental set of dynamics through which the core elements – learners, educators, content and resources – are related. This chapter has focused on pedagogies that especially depend on inquiry and collaborative work as critical for preparing students for future learning like those opened up by powerful communication technologies, some of which can only be realised through ICT. Use of film, especially learner-driven or created, is a prominent feature of innovative learning environments. But, just as importantly, the chapter has stressed how relevant are **mixes** of pedagogical approaches, a perspective facilitated by the holistic, through-time concept of "learning environment": far from the featured innovative learning environments being characterised by single methods or single technologies, they rely on combinations of approaches (including direct teaching).

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Chapter 5

Designing formative learning organisations

This chapter looks at learning environments as directed eco-systems, and how they develop over time so as to maintain (ideally strengthen) learning as the central preoccupation and realise the ILE (Innovative Learning Environments) learning principles. In this continuous cycle, leadership is essential to ensure that particular learning designs are put in place. The learning leadership requires vision and it necessarily requires strategies to realise such vision to take it "off the drawing board". Teacher engagement and professional development are key aspects of the design process. Learners themselves are prominent partners in the learning environments ("learner voice"). For the learning environment to be formative, it needs to be highly informed about the learning taking place within it and it is "information rich" in this sense. For that rich information to inform further growth in the learning environment it must be fed back, reflected on and strategically used to "redesign" the learning environment.

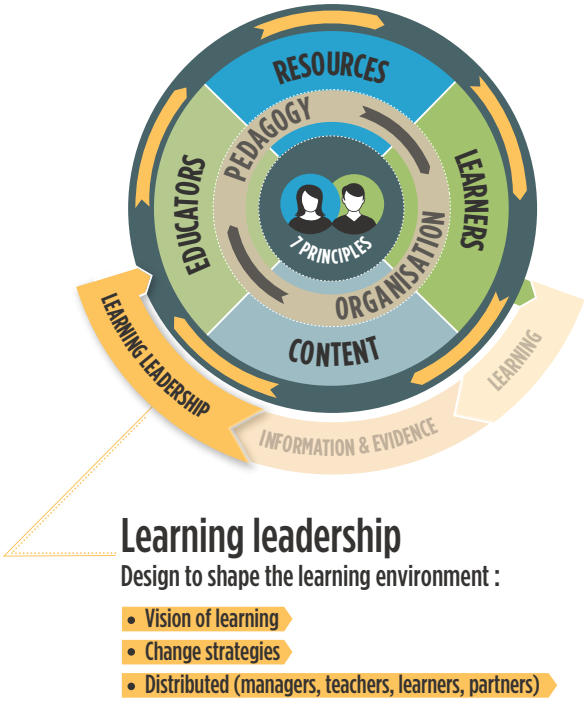
Introduction

In this chapter the focus widens. This is about the learning environment as a directed eco-system in which processes of design and redesign maintain learning at the core and realise the principles presented in *The Nature of Learning*. Leadership is essential to ensure that particular learning designs are put in place; this is how "learning leadership" is understood in this report. Educator engagement and professional development are key aspects of the design process. Learners themselves are active partners, this is discussed in this chapter under "learner voice". For the learning environment to be formative – and not only particular classes or learning episodes – it needs to be highly informed about the learning taking place within it. But such information does not become relevant actionable knowledge unless it is fed back in usable forms to inform further development and direction: hence, "redesign".

Learning leadership

The case study learning environments illustrate well the importance of learning leadership in clarifying the visions for learning that provide direction. Sometimes, this is itself underpinned by a particular educational approach, based on philosophy or research. The leadership is exercised not as a single identification of the way ahead but as an on-going process that involves the strategies for implementation as well as the guiding visions. Of necessity, this is a distributed process. Sometimes the partners involved in the distributed learning leadership come from outside as discussed further in the next chapter (an example being foundations that have become engaged in fostering particular visions of innovative learning through concrete cases).

Figure 5.1. **Learning leadership as design**



Varying reliance on an explicit philosophy

A number of the project cases are inspired by explicit philosophies or by an approach that is specific to the leader or the school itself.

> The pedagogical concept of the *Jenaplan-Schule, Jena (Thuringia, Germany)* is based upon the reform-pedagogical practice of Peter Petersen (1927). The "Kleine Jenaplan" (or little Jenaplan) which was tested and further developed by today's Jenaplan School, now forms the backbone to the school's pedagogical practices.
>
> Inspired by several aspects of the pedagogical concept of Peter Petersen (Jenaplan) the *ImPULS-Schule (Thuringia, Germany)* aims at a learning and teaching concept that sees learning from the eyes of the child. The school follows two aims: 1) lifelong learning and 2) creating a balance between promoting individual interests/needs and the communication of social ideals and rules.
>
> *Europäische Volksschule Dr. Leopold Zechner (Austria)* identifies itself as a European school with many languages and can be characterised by aspects of progressive education associated with Dewey, Montessori and the Dalton Plan.

Sometimes, the inspiration behind the main approach combines philosophy with research.

> In the search for the new school of the 21st century, the team leading the transformation of the *Instituto Escuela Jacint Verdaguer (Spain)* – based on authors such as Piaget, Decroly and Montessori, Dewey and Kilpatrick, Bruner and Vigotsky, Feldman – established a pedagogical basis on four pillars: 1) student autonomy; 2) co-operation among the group; 3) using intellectual work resources and ICT to develop knowledge; 4) a methodology of co-operation and discovery rather than the accumulation of contents. The reference was the UNESCO report which identified learning to know, learning to do, learning to live together, and learning to be (Delors et al., 1996).
>
> *Colegio Karol Cardenal de Cracovia (Chile)* has established a work system based on wide participation and many programmed activities based on community pedagogy. This has its background in principles from Carl Rogers and are also based on Howard Gardner's theory of multiple intelligence.
>
> The principles of "turn-around pedagogy" (Kamler and Comber, 2005) are visible in the *NETschool (Victoria, Australia)*. According to this, all students come in with funds of knowledge from their own social environments, but only some are invited to share or use it: the aim should be to re-connect learners with education and appreciate their unrecognised interests and abilities. William Glasser (1998)'s choice theory underpins NETschool's focus on student autonomy, respect for individual choices, and the beneficial effects of physical activity on negative thought patterns.
>
> Andreas Müller, in setting up the *Institut Beatenberg (Bern, Switzerland)* in the 1980s, turned to the research on motivation and self-regulation in learning. The model draws on the results of many scientific theories from the psychology of learning and motivation, cognitive science, neuroscience, educational science, constructivism and organisational development.
>
> "Resource-oriented pedagogy" is the basis of the learning environment at the *REOSCH (Bern, Switzerland)*, developed by Jakob Widmer, the school's founder. The focus is on the means to perform that an individual has at his or her disposal. Widmer drew on meditation, philosophy, educational science, didactics and brain

research to develop the educational concept that is about working on the means – i.e. resources – that learners have at their disposal to perform. Mental training, martial arts, the energy diary, and other approaches are all integral to this.

"Invitational Education" (IE) (Hong Kong) was developed by Purkey and Novak (1996), to help learners realise their potential intellectually, socially, physically, psychologically, and spiritually, as well as to identify and change the forces that inhibit potential. *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* is a real example of IE as it has successfully made use of the 5 "Ps" (People, Place, Programmes, Policies and Processes), to create an environment where each learner is given the space to develop holistically.

In yet other cases, the approaches have a strong basis in research with at least part of the design of the learning environment based on this.

Courtenay Gardens Primary School (Victoria, Australia) has been strongly influenced by the work of Douglas Reeves (2006) on strategies for high achievement despite high levels of disadvantage. Success, for Reeves, is based on some common elements, some of which are more familiar (focus on academic achievement, clear curriculum choices, frequent assessment and improvement opportunities) but others – emphasis on non-fiction writing, collaborative scoring of student work – are less common.

The *Community of Learners Network (British Columbia, Canada)* names the "seminal work of Black and Wiliam (1998)" as the instigator of a set of key assessment strategies referred to as the "Six Big Assessment for Learning Strategies ... used in the classroom inquiry cycle: learning intentions, criteria, descriptive feedback, self and peer assessment, questions and ownership".

The *School Improvement Advisor (SIA) (Ticino, Switzerland)* used the methodology "Understanding by Design" developed by educators Grant Wiggins and Jay McTighe for improving student achievement (Wiggins and McTighe, 2007). This emphasises the teacher's critical role as a designer of student learning, and works within the standards-driven curriculum to clarify learning goals, devise revealing assessments of student understanding, and create effective and engaging learning activities.

The *Mordialloc College (Victoria, Australia)* introduced quality processes for learning strategies, influenced by PEEL (Project for Enhancing Effective Learning; Mitchell et al., 2001). PEEL addressed the lack of independent, student-directed and reflective learning, and through collaborative action-research the team worked to design pedagogies to stimulate and engage students and provide them with a sense of direction.

More often, the sources of inspiration are diverse and diffuse so that the learning leadership is not based on a single or main intellectual source.

Learning leadership as design

The case studies furnish examples of how a deliberate learning design process was used to shift existing patterns and habits in the direction of innovative learning. Some actually use the vocabulary of design, and recognise that it is a continuous process not a one-off implementation of a given plan.

The new principal at *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* proposed radical change to combat closure from declining enrolments and won the support of the Education Bureau for her bold plan. The school adopted several innovations in the organisation of learning simultaneously, based on 21st century learning principles.

What was important was that "we had complete ownership over the development of the vision for learning and the new curriculum, and that's where we got to work with the most energy in the early days" (*John Monash Science School, Victoria, Australia* principal).

Andreas Müller assumed leadership of the *Institut Beatenberg (Bern, Switzerland)* in the mid-1980s. Rather than looking at existing schools as models, he turned to research on motivation and self-regulation in learning which led him to organise the teaching and learning quite differently.

Community Learning Campus (CLC), Olds High School (Alberta, Canada) created a vision supported by unique solutions and an instructional model to guide the creation of this innovative learning environment: "Where students come first." When asked to describe the pedagogical approach, teachers were quick to point out they felt they were at the beginning stages and were working together to design practices that they themselves had never experienced. The teachers are careful to ensure the students encounter the territory as richly textured, and open to inquiry, deeper exploration and investigation.

The case study innovations vary, however, in the extent to which there was seismic shift or more incremental introduction of the new design. Compare the situation in CEIP Andalucía and the Viennese Europe School:

Given their difficult situation in *CEIP Andalucía, Seville (Spain)*, at some point, teachers decided to stop and confront the stark choice: "Either take the bull by the horns, roll up our sleeves and analyse the situation, study and be trained to establish coherence between our work and the situation we are in and, as a result, go to work happy and with no fear, or ask for a transfer or a secondment, take sick leave due to depression ... and leave". In choosing the first option, the Teachers' Assembly has been immersed for ten years in an on-going process to improve practice and respond to the social disadvantage.

At the *Europäische Volksschule Dr. Leopold Zechner (Austria)* the former principal began the drive to integrate immigrant children's home languages into the classroom. This triggered a wealth of other changes, such as the use of peer learning and co-operative learning and forms of assessment better suited to empowering disadvantaged students. Through step-by-step adjustments the school has accommodated the learning needs of their students and this has led to a new way of learning.

The importance of distributed leadership is well recognised (OECD 2008; Spillane and Diamond, 2007) and discussed next. Nevertheless, the charismatic role of particular principals may well have been the initial driver of change, and indeed the case studies allude to how important was that drive to bring along reluctant members of the learning community.

At *Europaschule Linz (Austria)* not everyone appreciated the change at the beginning. Many teachers opposed the idea of integrating pupils with special educational needs as they perceived this as an additional burden on top of the

> "many bad pupils". Some teachers even asked the current head teacher to leave the school for the confusion he seemed to be bringing. Yet, two years later the first integration class was opened and after two more years, the perception of this class had completely changed as integration had turned out to be successful in terms of promoting learning and social competences.
>
> All the interviews at *Instituto Agrícola Pascual Baburizza (Chile)* mentioned the role of the principal. For the IAPB Advisory Council, he is a "person who is able to listen to others, who has led the Institute to impressive heights. He knows exactly what the problem is and in the solution he counts on us, with the Foundation and with teachers. This generates moments of union that are very effective and important".
>
> The principal at *Lobdeburgschule (Thuringia, Germany)* understands herself as a visionary. She has to inspire the colleagues and has to take them to new paths of school development.
>
> The name *Colegio Karol Cardenal de Cracovia (Chile)* is in tribute to Pope John Paul II who, for the principal, represents the highest spiritual authority and peace, embodied by a flying dove, a symbol that all students wear on their uniform. Teachers, parents and students have been able to follow the ideas of the principal, which has not always been an easy task. Many did not understand immediately the idea behind the model, but they have slowly got used to it and the great possibilities it can open up for their families and mainly for the children. The principal defines this idea in his book, as "a different school, a school committed to people and that transforms boys and girls into the first actors of teaching and learning process".

That certain of the charismatic leaders in the case studies – the principals of the *Colegio Karol Cardenal de Cracovia (Chile)* and the *Institut Beatenberg (Bern, Switzerland)*, for instance – have made their ideas and learning models explicit through writing books about them has the consequence of rendering this knowledge public and means that arrangements are not dependent only on the day-to-day inspiration of the leader. The sustainability of the learning environment beyond the inspiration of a particular individual is a real issue, one that the following example from British Columbia has deliberately sought to address.

> But while leadership of *Saturna Ecological Education Centre (British Columbia, Canada)* has shifted, the project's goals have been maintained and deepened to reflect 21st century learning initiatives.

Distributed learning leadership

By the very nature of learning leadership, it has to be distributed. As it is about the design and redesign of the learning environment, and the formative nature of the learning organisation, this cannot depend on one or two individuals to be effective. It requires a larger engagement across teams of professionals. This may be achieved through a complex deliberate leadership process, as illustrated by certain of the case study sites.

> The principal and teachers of *Mevo'ot HaNegev (Israel)* were supported by the authorities in their innovative plan to change the organisation of learning. Teachers were given an unusual amount of freedom in the design of learning, which turned them into leaders for learning. They report a "sense of rejuvenation and empowerment".

The principal at *Courtenay Gardens Primary School (Victoria, Australia)* identifies the importance of the transition achieved from organisational leadership to educational leadership, a shift in focus from leadership as managing pedagogy to leadership as doing pedagogy. The distributed role of learning leadership is confirmed by the Maths co-ordinator:

> We have a whole-school text. We follow Maths Plus because that was what the staff decided. Not just one person. We pulled out all of the texts ... we were actually using a different text a couple of years ago and we decided that wasn't suiting our needs at the school so we trialled a new text last year and now we've decided as a school that that was the best text for us to use.

A teacher at the programme *Anim8tors@MWPS, Mount Waverley Primary School (Victoria, Australia)*, said that "it would have been difficult to change things so quickly without the team of teachers agreeing to change their pedagogies and practices".

Having stressed the importance of distribution in leadership, nevertheless the cases offer examples of critical dependence on the principal to provide the permission and space to design the new learning environment but bringing in the wider team as an inevitable part of the process.

The development of *ImPULS-Schule (Thuringia, Germany)* has been significantly promoted by the principal. This leadership is supported by a committed team embracing change which has experienced the success of its own concept. Groups of teachers around different subjects were formed who are still working together, while a few groups of teachers are working on school development – this means that the development is mainly bottom-up. ImPULS has not rested on its laurels but promoted further development by a sophisticated and comprehensive process, enabling it to cope with change on an on-going basis.

Ideas of a new type of school broke through in an environment of confusion and dissatisfaction within the staff at *Breidablikk School (Norway)*. Renovation and new buildings had turned out to be ill-fitted to the pedagogy the teachers traditionally used. But parallel to the dissatisfaction were some positive factors for change. A new principal arrived who, like some of the teachers, had a vision of a more practical lower secondary school. The new leader provided space for discussions about alternative pedagogy and through staff meetings, it was decided that Breidablikk should develop as an alternative to a traditional and theory-oriented school. A new practical pedagogical model emerged.

But, distributed leadership cannot rely on the energy and drive of single individuals nor is it simply an organic spontaneous process: it may involve establishing organisational structures to facilitate the innovation process. One of the reasons why leadership and change has to be distributed is precisely because it is too complex a process to be monopolised by single positions or functions. Hence, different groups have particular designated tasks such as professional development, reorganisation or evaluation to exercise the learning leadership effectively:

Before the current principal arrived at *Europäische Volksschule Dr. Leopold Zechner (Austria)*, the two general directions – reform pedagogy and language learning – were already in place but were unrelated to each other. The teachers and the principal agree that the school development group managed to combine them

so that one can now rightly speak of a unified school culture ("the awareness of being one social community has increased"). The Language Studios were also the result of the developmental work of the team, including students from grade two to four.

Leadership is distributed among different actors inside *Instituto Agrícola Pascual Baburizza (Chile)*: in the general setting of direction the role of the school principal is recognised; at the school the leader is the Head of the Academic Department, but in the field the leader is the Head of Production. The different working areas determine the different leaderships. The role of the Head of the Academic Department has been transformed into a very important pillar.

Workgroups were set up for the most important areas covered by *Dobbantó (Springboard) (Hungary)*, made up of experts with rich practical and/or development experience and wide-ranging theoretical knowledge. The concrete content of the programme was drawn up by two groups: the *Content Development* group and the *Bridge to the World of Work* group. The *Student Support* workgroup worked on issues like drawing up schedules for the new school days and developing the student-teacher relationship, focussing on the complex needs of students. The task of the *Institutionalisation* workgroup was optimising the conditions of sustainability, including developments and changes at the school, local, regional and national level and in the legal framework, as well as disseminating the results. The *School Development* workgroup supported implementation in schools, in particular through the training of and regular co-operation with *educoaches* supporting school management and *change agent mentors* working with teachers participating in the programme, and also organised training for the school leaders and supported teachers' regional meetings twice each year.

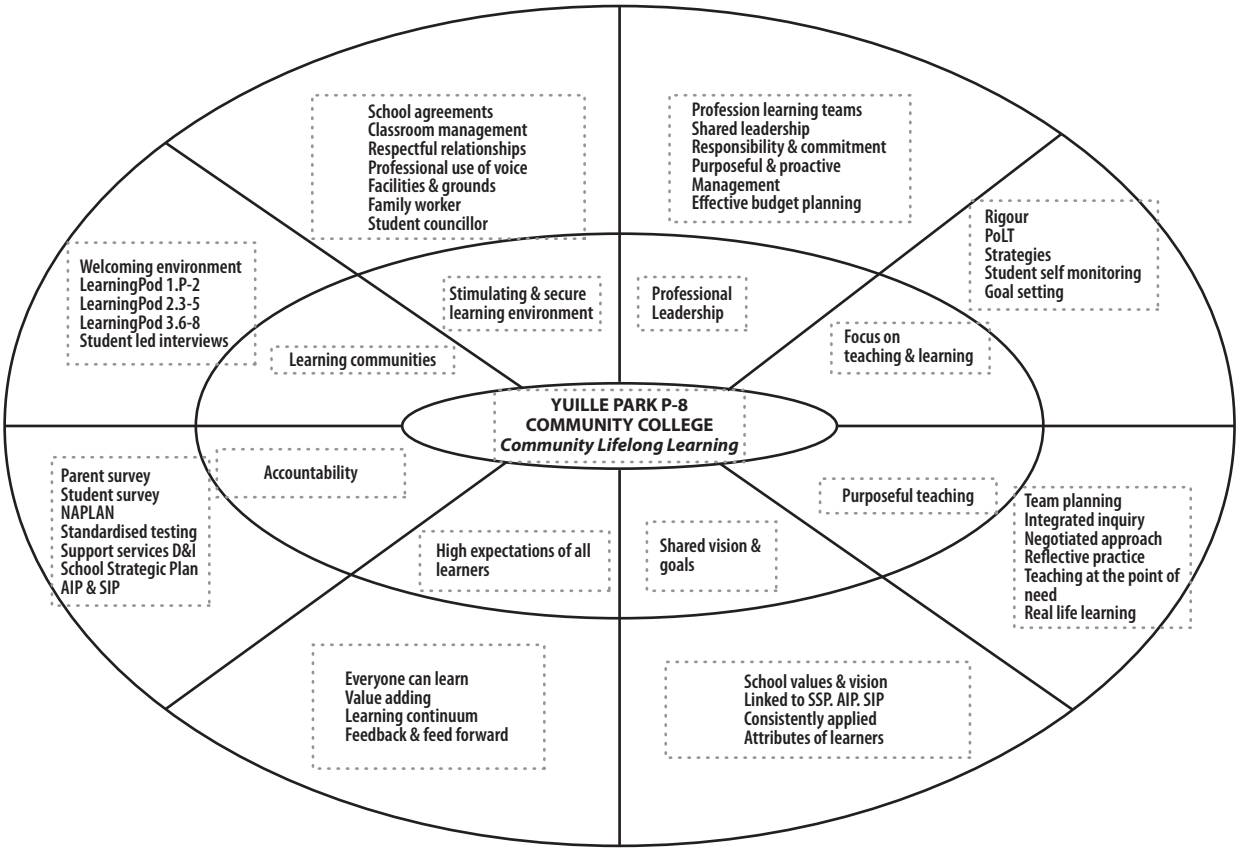
A culture of learning and work at *Jenaplan-Schule (Thuringia, Germany)* was developed by the co-operation of teacher teams. Mutual supervision and consultation among teachers is a given: the teams work independently and also receive the necessary freedom to make decisions by the school management. Every person is self-motivated, since his/her own opinion is important and taken seriously by all participants. One representative per team works in a co-ordinating group which consults weekly and which, together with the school management, decides on organisational and content questions.

The complex yet organic nature of the learning organisation and leadership process is illustrated by the following two Australian examples, which are sufficiently formalised that they can be expressed as a set of diagrammatic relationships. The *Yuille Park P-8 Community College (Victoria, Australia)* addresses its design, strategising, and redesign around eight different spokes or pillars – learning communities, stimulating and secure learning environment, professional leadership, focus on teaching and learning, purposeful teaching, shared vision and goals, high expectations of all learners, and accountability – involving a widely drawn set of players (Figure 5.2).

As always, there is a diversity of community membership at *Yuille Park P-8 Community College (Victoria, Australia)* but unusually, the principal, team leaders, teachers, teachers' aides, paid staff, volunteer staff, parents, teachers from other schools, employees of other government agencies and local community members all work together in an almost flat structure. All voices are listened to: visiting Yuille Park Community College is an uplifting experience as an atmosphere of enthusiasm for learning and for working with the young people.

There is cohesion between the vision, architecture, social environment and pedagogical approaches throughout Yuille Park that is the result of the attention given to planning and operations.

Figure 5.2. **Framework for enacting the vision at Yuille Park P-8 Community College**



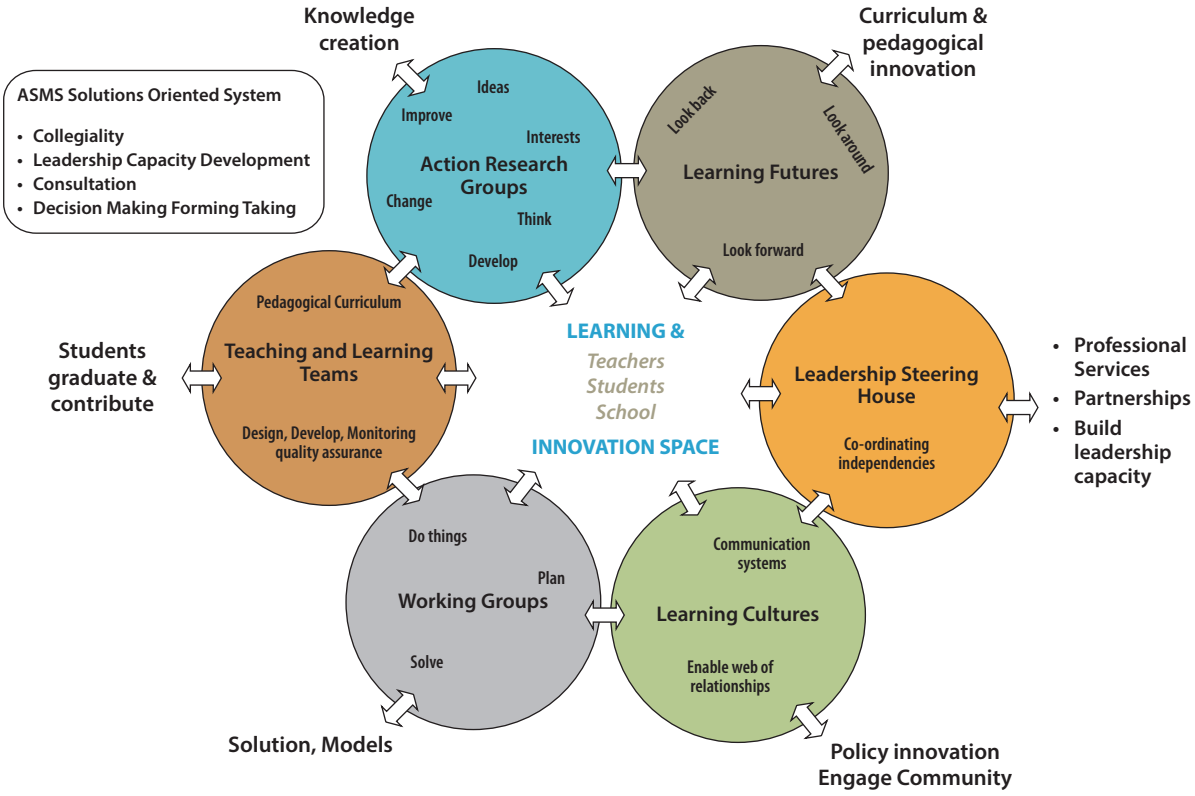
Source: OECD (2012). Inventory case study "Yuille Park P-8 Community College", www.oecd.org/edu/ceri/50203545.pdf (accessed 11 July 2013).

Similarly, the *Australian Science and Mathematics School (South Australia, Australia)*, operates with a complex set of teams working on specific areas of development to grow, embed, sustain, and re-grow the learning innovation (Figure 5.3). Learning and innovation are at the centre, with different teams looking at and contributing to learning leadership, research, learning cultures, etc., including the longer-term reflection of a group working on learning futures. They bring into this all the different stakeholders and functions discussed in the rest of this chapter and the next one.

Formalised staff professional learning, underpinned by the distributive leadership model developed by the *Australian Science and Mathematics School*, occurs within scheduled weekly meeting sessions when students have early dismissal. Figure 5.3 shows how the ideas generated by the collegial teamwork flow throughout the organisation and beyond. The teams are formed according to the work that needs to be done and the learning that is required to support that with new ideas for innovation and policy development arising from any of the teams. Leadership resides in the knowledge and expertise of individuals rather than from their role

and position and the teams are interdependent with people working and learning together flexibly and dynamically. This enables the organisation to respond to change through learning and innovation.

Figure 5.3. **ASMS distributive leadership model, 2011**



Source: OECD (2012). Inventory case study "Australian Science and Mathematics School (ASMS)", www.oecd.org/edu/ceri/49930609.pdf (accessed 11 July 2013).

From vision to implementation

Clearly, it is not enough to have a vision of what the new learning should be: that vision needs then to be implemented and perhaps refined, a process that itself requires leadership.

Soon after the initial ideas were introduced and embraced at *Breidablikk School (Norway)* the first steps in the implementation process were taken. An internal working group representing the whole staff and the teachers' association was created, with time, resources and support from the top, with the possibility of contracting in external professional support.

The team of teachers at *Internet Classroom, Kkofja Loka Primary School (Slovenia)* became a development team to foster digital and other key competencies, as well as self-initiative and creativity. Because e-classrooms proved to be a promising means for achieving those aims, and because pupils and their parents embraced them enthusiastically, the members of the team were successful in sharing their experience, knowledge and ideas with the whole school faculty. Consequently, the number of e-classrooms increased and extended to all subjects and to different learner age groups.

To move from design to implementation can itself call for creative design of the tools and processes involved. The examples of *Valby Oppvenkstsenter (Norway)* and *John Monash Science School (Victoria, Australia)* illustrate how elaborate the implementation models may be. In the first case, Valby Oppvenkstsenter recognises that the organisational learning process is never-ending but is nevertheless structured around a set of steps and methodologies for moving from visions and objectives to environment-wide learning. In the case of John Monash, there is a formalised staff code which combines the four design pillars (see below) with a code of professional practice and a learner development framework:

> "Leadership for learning – the process model" at *Valby Oppvenkstsenter* has three key elements: 1) Vision and main objectives, 2) Methodology and organisation and 3) Collective learning (see Table 5.1). From a process perspective, the short vision statement was on "How to sustain a continuous improvement process?" as a never-ending story. The approaches developed – Project Companion and the History Lesson – provided the method and defined the collective learning.

Table 5.1. **An action learning perspective – a never-ending story**

Vision & main objectives	Method & Organisation	Collective learning
How to sustain a continuous process of development and improvement This included: • The organisation Valby school • The school leadership • The teachers • Every class • Every child • Development and improvement should include both the collective and the individual • What we expect from the children we should also expect from the staff	*Log format* • A log should be as close to the actual event as possible • A log is a description of a situation -like a running video • Description should not involve evaluation • A log should not be considered good or bad by others *Working groups* • rotation and sharing *Project companions* • Best practice • Similar challlenges	*New organisational and pedagodical practices emerge* • The log is read • Free associations among the staff – sometimes this means time for quiet reflection • Through this process individuals recognise situations that they have experienced, and this creates new input for discussion • Ideas and preliminary conclusions are tested against core values

Source: OECD (2012). Inventory case study "Valby early development centre and primary school, Larvik - an active learning approach", www.oecd.org/edu/ceri/49945416.pdf (accessed 20 August 2013).

The Staff Code of Professional Practice and the Learner's Developmental Framework at *John Monash Science School (Victoria, Australia)* are both organised around the UNESCO *4 Pillars of Education* (Learning to Live Together, Learning to Know, Learning to Do, and Learning to Be). The leadership team, with staff input, generated a vision and how the four Pillars can be used to think deeply about the emergent learning community.

> They own the document. They created the document. It is continually refined. It must be up to its third, fourth or fifth go, now. It was one of the very first things we did ... a consistent set of expectations for staff and for students. As more people come on board, we visit it again, because the vision changes, even a little bit. If we sign on something like this, it means we have to follow it, like a contract of sorts. You have to have expectations right. (*John Monash Science School* assistant principal)

> The innovative concept at *John Monash Science School* is led by a number of key teams. They created a complex structure of team meetings and training sessions in the lessons schedule, and a system of internal pedagogical guides – experts in knowledge fields who guide colleague teachers and are trained 3 hours a week for that purpose. These guides facilitate curriculum development, they enter their

Table 5.2. **John Monash Science School "Staff code of professional practice" and "Learner's development framework"**

	Staff Code of Professional Practice	JMSS Learner's Developmental Framework
Learning to live together	Focused on building sound relationships	Focused on building sound relationships
	We create a sustainable, safe, encouraging and supportive environment conducive to effective learning and aimed at developing core skills, values and attributes in our learners.	Our learners build effective collaboration and teamwork by working constructively together, considering and valuing all input and viewpoints fairly.
	We build effective collaboration by working constructively together, considering and valuing the input and viewpoints of all.	Our learners build positive, respectful and caring relationships with all community members, and celebrate diversity.
	We build positive, respectful, and caring relationships with all community members.	Our learners contribute to the creation of a safe, welcoming, encouraging and supportive learning environment and community.
	We value and celebrate diversity and are inclusive of others.	Our learners have a global perspective, know and care about the world and its communities, and seek to live sustainably and impact positively now and in the future.
	We work effectively in teams to ensure student outcomes are maximised in open, sharing learning practices.	
	Focused on our professional learning	**Focused on thinking and understanding**
Learning to know	We know our students and place them at the centre of teaching, learning, decision making and action.	Our learners are effective inquirers, able to ask meaningful questions which probe understanding, and take risks in their learning.
	We undertake professional learning that reflects current research, DEECD policies and initiatives.	Our learners are critical thinkers, able to analyse information, evaluate evidence and produce informed conclusions.
	We share our expertise, knowledge and developed resources with colleagues, and actively develop professional networks and partnerships in the wider educational community.	Our learners are creative thinkers, open to new ideas, imaginative and resourceful in their use of different strategies and approaches.
	We regularly and critically reflect on our teaching practice through multiple sources of feedback to improve the quality of teaching and learning at our school.	Our learners are reflective, aware of their own skills and abilities, and open to feedback to improve their own ideas or performance.
	Staff Code of Professional Practice	**JMSS Learner's Developmental Framework**
Learning to do	Focused on professional practice	Focused on knowledge and skill acquisition
	We provide high quality teaching, learning experiences and assessment strategies informed by best practice to promote effective learning in our students.	Our learners are adaptable, being able to listen effectively with change, skilled in the use of modern technologies, and prepared to meet any challenge with optimism.
	We work collaboratively toward a shared view of effective learning and teaching so that consistent approaches to pedagogy are practiced.	Our learners are effective communicators, being attentive listeners and also articulate in both written and spoken media.
	We set and maintain high expectations of ourselves and our students.	Our learners are persistent, being able to work effectively through difficulties, and resilient in the face of setbacks.
	We develop and implement a personal professional learning improvement plan that contributes to school improvement and our individual professional growth.	Our learners develop the competencies necessary to advance their learning in specific disciplines, and are responsible for their own learning.
	Focused on developing good people	**Focused on developing good people**
Learning to be	We act ethically, responsibly and with integrity.	Our learners are well-rounded with a broad range of skills, perspectives and interests.
	We encourage everyone to achieve their personal best, and positively reinforce their efforts with a sense of optimism and a can-do perspective.	Our learners strive to achieve their personal best in everything they do.
	We advance the teaching profession through high standards of professional behaviour, punctuality and dress.	Our learners are optimistic, confident, enthusiastic and passionate about learning.
	We welcome people new to our community and help them transition quickly into their environment.	Our learners are able to examine issues from a wide range of perspectives, and understand the need to act honestly and ethically when making decisions.
	We recognise and celebrate the achievements of all members of our community.	Our learners value and develop the dimensions of leadership.

Source: OECD (2012) Inventory case study "John Monash Science School", www.oecd.org/edu/ceri/50204045.pdf (accessed 1 July 2013).

colleagues' classes and together they promote teaching and evaluation. One of the pedagogical guides reports that "after we plan together as a team I get into the lessons and record what happens. This record enables the team to examine how the planning came into effect and we make improvements if necessary. We call it learning oriented feedback".

Maintaining distributed learning leadership is not straightforward or automatic; it needs to be constantly recreated and supported. It may be eroded by a variety of pressures including those that derive from staff changes themselves. The importance of teacher learning may be emphasised as a means of coping with or seeking to avoid turnover of staff; it is in any case at the core of defining a more expert profession that, in the process, becomes more attractive to join and to stay involved with.

To deal with teacher instability in *Instituto Escuela Jacint Verdaguer (Spain)* there are three main approaches, all involving professional learning. First, there is internal training: during the first term, teachers provide specific training to the new ones just joining. Second, there is tutoring/mentoring with new teachers paired with more experienced teachers who supervise and guide them. Third, there are "pedagogical meetings", involving discussion on the school methodology. These measures represent an additional effort for the teachers who carry out this leadership work.

The role of professional learning is critical, not just at the level of individual competences and skills sets but in terms of the creation and maintenance of a professional body capable of realising the challenging teaching and design objectives that are integral to powerful contemporary learning environments.

The centrality of educator leadership and learning

The innovative learning environments not only provide inspiring examples regarding the nature of student learning, many of them also have a very inspiring approach with respect to the way teachers work and learn. The seven "principles" from *The Nature of Learning* (Dumont et al., 2010) can be reformulated in terms of the adults responsible for orchestrating the learning, given that schools should be learning organisations for them too and not only for the students. Following this, the principles can be restated to argue that the learning environment should be one where and which:

- Educators share a clear priority about the centrality of learning, for their students and themselves, and are fully engaged in meeting that priority; the teachers as well as the students understand themselves as learners.
- Ensures that teaching is not a private matter and indeed is often done collaboratively.
- Recognises and responds to the diverse educator motivations and understands that their professional performance is intricately linked to emotions (satisfaction, self-efficacy, avoidance of helplessness and anxiety, etc.)
- Is acutely sensitive to individual differences in the capacities and experiences of each teacher and is able to build those in personalised ways as well as through shared professional development.
- Is highly demanding for each educator while seeking to avoid excessive overload or stress that diminishes not enhances performance.

- Educators work formatively – not just with the learners but in terms of the organisational strategies of design and development using rich evaluative information on the teaching and learning taking place.
- There is horizontal connectedness to which educators centrally contribute – across activities and subjects, in and out of school including with other partners engaged in the learning environment (community, cultural and enterprise partners), and with other schools and organisations with which the educators are connected at a distance.

The characteristics of a dynamic, effective 21st century learning environment call for new definitions of educator roles, and the case study illustrations show the variety of ways in which these have been transformed. Their role is critical. Expressed in this way, the principles underpin the centrality of learning yet the importance of teachers and educators in creating the conditions for that learning to take place.

At the same time, it is important not to exaggerate contrasts. Dylan Wiliam, in his contribution to *The Nature of Learning*, summarises the risk of exaggerating the changing role of educators in learning environments by those promoting either/or choices when instead it is about expanding and refocussing teacher roles:

> Many have called for a shift in the role of the teacher from the "sage on the stage" to the "guide on the side". The danger with such a characterisation is that it is often interpreted as relieving the teacher of responsibility for ensuring that learning takes place. What I propose here is that the teacher be regarded as responsible for "engineering" a learning environment, both in its design and its operation. (Wiliam, 2010: 152)

The focus on design and engineering fits closely with the position of this report, with the proviso that this should be seen as a collective as well as individual responsibility, and as part of the larger organisational strategy of design and redesign in the service of learning. Hence, instead of arguing that educators should abandon one definition of their work in favour of another, rather what is seen in realising *The Nature of Learning* principles is an expansion of teacher professionalism to embrace new repertoires. It is about knowing when to use each one, sometimes with different students at the same time, or with the same group of learners at different times. It involves a more collaborative definition of professionalism, which recognises the visible shared nature of teacher work yet collaboration in which the talents and experiences of each educator are developed and built on rather than assuming that each is identical to the others.

> To become a learning organisation, it needs teachers who understand themselves as permanently learning; at the *ImPULS-Schule (Thuringia, Germany)* every teacher has the possibility to specialise him/herself without this being stipulated by a particular qualification. Every teacher is invited to explore and develop new possibilities and potentials – which implies embracing a co-operative understanding of their own profession. The teachers understand that they should learn together and accept differences. Just as the following values and norms are valid for learners so they are for teachers:
>
> - the right to their own identity
> - a positive appreciation of differences and heterogeneity
> - living within social relations
> - learning is never finished.

The *Institut Beatenberg (Bern, Switzerland)* aims to provide an ideal learning environment in which the pupils become entrepreneurs of their own learning. This declared aim has far-reaching consequences for *(a)* the role of the teachers, because this kind of setting requires them to be learning facilitators rather than imparters of knowledge; *(b)* the design of the (physical) environment; and *(c)* the design and organisation of learning.

In *Jenaplan-Schule (Thuringia, Germany)* it was reported how important it is to be "authentic" as a teacher and become a skilled mentor and co-ordinator. The teacher has a "particular idealism" and is willing to invest a lot of effort and time; the teachers' role is to observe, analyse and to support the students in their learning. Teachers are seen as experts in their field who seek to stimulate learners' enjoyment of learning so that they can approach the lesson topic with sufficient personal resources and become researchers and discoverers.

At *Mevo'ot HaNegev (Israel)* the teacher's role has changed: from being the single source of knowledge the teacher also becomes a partner of learning. The teacher's main role is in overall planning of the learning process, of guiding and directing the learners, of accompanying the learning by personal talks, in small groups and with the entire class. At the same time, in order to ensure that the learners acquire a knowledge base and essential concepts that are necessary for learning and investigation, the teacher also integrates frontal teaching in the lesson matrix.

This way of working has inspired in the teaching team at *John Monash Science School (Victoria, Australia)* the metaphor of "teachers as cooks" using the kitchen utensils (space, ADSL broadband, computers, etc.) and the necessary ingredients (materials and resources, digital and non-digital) to provide a daily meal (the same for everybody) and a menu (search for excellence and attention to diversity).

With the *Centre for Studies on Design at Monterrey (CEDIM) (Nuevo León, Mexico)*, teachers become learning counsellors carrying out consulting or tutorship for their own students by taking projects proposed by external agents (enterprises and public or private institutions), and presenting them to the students as the main objective of a 4-month learning period.

The teachers/mentors in the Enrichment Programmes, *Rodica Primary School (Slovenia)* aim to furnish learners with knowledge, techniques and tools in order to get them skilled in the area of research work and to become effective in searching for answers to research questions. But, they also function as facilitators and catalysts – seeking to challenge learners' curiosity, a certain kind of basic interest which fosters independent research.

Valerie Hannon (2012) offers the example of the school which found it helpful to work with four types of "teacher": tutor, expert, mentor, coach; and four sources of each of these: peer, parent/carer, teacher, other adult. This variety lies behind the use of the term "educator" given that a number of different players may fill the teaching role. Each of the roles can be filled by each of the "cast". Sometimes these roles are filled by design, based on obvious expertise; sometimes they are serendipitous. Indeed some of the more exciting innovations have occurred when roles are filled by the least expected. Perhaps the only generalisations which can be made here are that the opportunities for a rich range of learning relationships should be optimised; and that there should be openness to considering some unusual or unconventional role-assignments.

In an earlier chapter the heightened sense of visibility was seen as sometimes taking its toll on the staff involved in the *Mordialloc College (Victoria, Australia)* and is not the only example where the innovation had called for a greater volume of work.

> It is recognised that the strategies at *Courtenay Gardens Primary School (Victoria, Australia)* have intensified the teachers' workload with the increased collection and analysis of student data as well as timely planning. The principal acknowledges these challenges, but sees them as worthwhile in order to ensure the success of students' learning.

Yet, not everywhere is this the reported experience:

> *Europaschule Linz (Austria)* took part in a study organised by the Johannes Keppler University Linz, which compared the well-being of its teachers with that in a "traditional" academic secondary school. The results showed that Europaschule's teachers have less time pressure, less physical strain and fewer role conflicts. Moreover, teachers from other schools report more often about matters considered stressful like new challenges or their students' behaviour.

Clearly, this is not something that can be generalised – so much depends on the particular innovation, circumstances, and management of all resources (including the human resources). The very fact of being trend-setting and ahead of conventional practice may bring its own problems of reluctant staff leaving or political or media opposition. Yet, part of the pressure may also come from the notoriety – dealing with the visitors, attention and pressure to take a system leadership role.

Teacher learning and professional development

Continuing professional development is a central part of teacher professional identity and through which learning leadership is exercised in passing from vision to implementation. Educator learning and professional development are critical means for developing the expertise to exercise the range of functions indicated in Figure 5.4: contributing to learning leadership, direct relations with learners, shaping content, developing learning resources, and being agents for the organisation and pedagogy of the learning environment.

Figure 5.4. **Teacher leadership and learning**

The project cases tend not to leave this to chance or simple individual idiosyncratic choice but have put in place a range of mechanisms to review teacher learning needs and how these fit into the larger needs of the learning environment.

> Teachers who join *CEIP Andalucía, Seville (Spain)* have to do some initial and continuing training on learning communities and the educational approach we have here: interactive groups, project work, constructivist methodology, communicative approach, dialogic learning, learning by discovering, knowledge of the school context and population, sign language, etc. This training takes place during and outside school hours, both on-site and outside.

> A key message from focus group sessions with teachers, school leaders and academics at the *Australian Science and Mathematics School (South Australia, Australia)* was about the importance placed on school staff's professional learning. This includes the professional development occurring informally through workspace co-location and in the staff room; through to each staff member developing annual Individual Professional Development (IPD) plans; involvement in action research work; gathering feedback on professional practice to determine professional learning directions, and group assessment of student learning against standards and other team-based activities. The staff document their IPDs, incorporating goals for improving pedagogical content knowledge and action research linked to the strategic directions of the school.

This may often include allotted time for teacher learning, which means it is formally signalled and recognised as a clear priority of the learning environment.

> The Professional Development Team in *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* is responsible for co-ordinating the different kinds of training activities in response to the reform and the needs of the school. Teachers undertake diverse modes of professional development activities, including seminars, workshops, experience-sharing sessions and different school-based professional support services. They participated on average 96 hours per teacher in these programmes in the 2009/2010 school year.

> The teachers are enthusiastic and show a high sense of cohesion and joint work at *Instituto Agrícola Pascual Baburizza (Chile)*. Every Friday afternoon teachers have a mandatory training session which is part of their schedule and responsibilities as teachers. They have to work during the normal vacation time in July and the Institute gives courses and organises workshops, evaluation courses, planning courses and other subjects on which they had identified as being less well prepared.

> In the *John Monash Science School (Victoria, Australia)* all staff members are required to complete an individual staff development plan, including identifying suitable professional learning opportunities. Every teacher has access to three hours of professional learning and curriculum development each Wednesday afternoon while the students are doing other activities.

> The *Dobbantó (Springboard) (Hungary)* programme gave a lot also to teachers. Almost all the interviewed teachers mentioned that they had learned many new methods, successfully handled challenges and emerged as better teachers. Some appreciated the possibility to act in a supporting role, and some that smaller class sizes allow them to do a better job. They did not simply acquire concrete pedagogical or technical and methodological knowledge; they stressed the

> importance of learning to co-operate constructively with colleagues, learning humanity, a love of children, a better work ethic, team spirit, enthusiasm and relying on each other. "Teachers often feel that the circumstances exclude the type of work that is expected when they are at training sessions. Here, on the other hand, all conditions can be provided, and we received ready-made materials [modules] and there was time to prepare. ... this gave us the chance to move to a higher level professionally." (Teacher focus group)

Educator learning routines

The particular strategy for teacher collaboration and learning developed at *Valby Oppvenkstsenter (Norway)*, involving observation and collegial feedback, is a variant of the "learning kernel routines" described by Lauren Resnick et al. (2010) in their contribution to *The Nature of Learning*. Again, it means that design and implementation is not about constant reinvention but relies on routines and methods that have been established for the purpose. This refers to Project Companion and the History Lesson:

> The "Project Companion tool" is for teachers to improve in class management, as relation builders, and in their didactical skills:
>
> - The teacher decides what topic she/he wants to be advised to develop.
> - The teacher chooses a project companion (a colleague) and presents it.
> - The project companion observes a spell of work.
> - The teacher and the project companion reflect together immediately afterwards.
> - The reflection is shared with the rest of the staff in the "History Lesson".
>
> "The History Lesson":
>
> - The teacher tells her/his story.
> - The staff meeting asks questions for clarification.
> - The staff meeting asks questions for reflection.
> - The meeting highlights the points they can learn from.
> - Summing up and adding good tools to the "toolbox" (e.g. the toolbox could contain the teacher's different pedagogical methods, techniques, tips and aids).

Advisers and mentors

Different methods may be used to review the professional development plans and requests of the staff, including through professional development committees, special learning advisors, or external evaluations.

> There is a culture amongst the *Courtenay Gardens Primary School (Victoria, Australia)* staff of seeking professional learning opportunities. The leadership has been central, and the Professional Development team focuses on ensuring that resources are allocated in a way that will further inform and implement the strategic plan.

> You know if it is worth it if it is related to the school goals. Why are they doing this? Will it be beneficial for that person? We give feedback straight from committee back to the person. There's heaps of opportunities to go to PD. (Prep co-ordinator)

In the *Ballarat High School (Victoria, Australia)*, professional development is central to the innovation: the school uses a set of teaching objectives as a "framework" for learning in the upper grades, forming part of a professional learning programme for all staff. A central role is played by learning advisors – teams of teachers who meet weekly with small groups of students and help students organise their learning. A leadership team develops and monitors this learning advisor approach and coaches staff in the implementation and assessment of changed practice linked to the framework. Learning preferences of the students, but also the staff, are measured with psychometric questionnaires, which are taken into account when planning tasks and learning strategies.

At the *Primarschule Lindenfeld, Burgdorf (Bern, Switzerland)*, professional development is based on evaluations conducted by the University of Bern's teacher education unit, as well as on frequent internal evaluation.

Several of the cases refer to mentoring as an integral part of the teacher development strategies in place. Mentoring brings significant benefits to novice teachers, as well as for the experienced teachers involved. It can also take place among peer teachers. As well as the professional learning involved, it is another way of regrouping teachers, and of moving away from models of work organisation dominated by the individual teacher working alone with his or her subject or class.

At the *Valby Oppvenkstsenter (Norway)*, professional development is given a high priority and is organised through peer mentoring, where each teacher collaborates with a colleague on learning assignments, develops and reflects on good interventions, and shares the insights and improved practices with the other teachers.

The task of the *School Improvement Advisor (SIA) (Ticino, Switzerland)* is not just to do consulting activity but also to act as a critical friend. The SIA encompasses both roles, and (s)he mentors the teachers in the creation and implementation of the education plan. A practical example is the assistance given to the teachers in developing evaluation instruments, analysing results and planning the subsequent action while as a critical friend the SIA can help in "difficult cases". Another example is provided by the individual and collective meetings that go deep into the meaning of school change conducted with the teachers.

The teaching team of each school in *Dobbantó (Springboard) (Hungary)* is supported by a so-called "change agent mentor", who is trained for this task in the programme and supported by regular supervision, and who visits the school each month. Mentors facilitate the start of reflective thinking and the process of change and offer alternative solutions to problems the team has struggled to resolve. The presence and activities of change agent mentors models the role that supporting teachers play in personalised education. Team-building is an important task of change agent mentors as well.

The inquiry work in the *Community of Learners Network (British Columbia, Canada)* has deepened and grown as the teachers continually inquire into their own practices and the achievement and engagement of their students. The teachers

> are seeking out and creating leadership opportunities to influence the practice of teaching colleagues within their own schools, schools in their community, and across the Province. These teachers – each in their own way – have established a role as mentors and coaches for their teaching colleagues by opening the doors of their classrooms for visiting colleagues and student teachers, by writing and reflecting on their on-going learning, by facilitating professional development opportunities throughout the region, and by presenting at local, national and international conferences.
>
> At *Courtenay Gardens Primary School (Victoria, Australia)* there is a strong focus on peer coaching, and the opportunity for one teacher or a group of teachers to observe another teacher in practice is commonly timetabled into the weekly teaching programme of the school. The leadership team of the school is continually identifying teachers who are able to demonstrate specific strengths, and staff can nominate other staff they wish to observe.
>
> Experienced team teachers also engage in coaching other teachers at *Lakes South Morang P-9 School (Victoria, Australia)* on teaching approaches that cater to different learning styles. This collaborative relationship among teaching staff contributes to a cycle of constant and relevant professional learning for teaching in such an environment.

At *Mevo'ot HaNegev (Israel)*, a developed system of observation and feedback through mentors has been developed to guide teacher practice and learning (though leading one of the teachers to confess "it is rather enslaving").

> *Mevo'ot HaNegev* set up a system of internal pedagogical guides – experts in knowledge fields who are trained 3 hours a week for that purpose – who enter their colleagues' classes and together they support the processes of teaching and evaluation. One of the pedagogical guides reports that "after we plan together as a team I get into the lessons and record what happens. This record enables the team to examine how the planning came into effect and we make improvements if necessary. We call it learning-oriented feedback". The teachers invest a lot of time and know-how in developing the course sites drawing on a wide variety of information sources, and using communication with peers and colleagues, and most importantly inviting feedback to the teacher. Before the submission of a task or before an exam the teachers open forums where they dedicate many hours in response to questions and messages.

Learner voice

In terms of the circle of design and redesign, the learners are active contributors to the on-going formative cycle rather than this being left only to the leadership, teachers, support workers and other partners. Valerie Hannon (2012) emphasises the key role of student voice and agency: one of the key factors in increasing engagement is the extent to which the learners feel a sense of agency over their own learning – that they have a say in how, and by whom, their learning can best be supported.

Many of the project innovations accord a great of importance to learner engagement (see Chapter 7, Principle 1); this may go still further in terms of extending to the learners an important role in shaping the learning environment and the choices to be made (summarised in Figure 5.5).

Figure 5.5. **Learner voice in the circle of design and redesign**

Sometimes, the students in the case study learning innovations summarise their perception of "voice" in general terms.

> Many of the students commented on the ways in which the *Community of Learners Network (British Columbia, Canada)* involved them in the school and in their community.
>
> Reinforcing the positive relationships culture of the *Australian Science and Mathematics School (South Australia, Australia)*, a student feedback survey indicated highly positive responses from students regarding developing democratic relationships, building a community of learners, and negotiating learning.

Sometimes, the learning environments have more formalised means for ensuring that learner voice is heard.

> Pupils' participation and activity is a very important goal of the pedagogical profile. The meeting, called pupils' impulse (*Schüler-ImPULS*), is a weekly event. Representatives of each class come to this meeting and discuss new ideas and problems at which the principal can take part but only as a guest (*ImPULS-Schule, Thuringia, Germany*).
>
> *Mordialloc College (Victoria, Australia)* seeks to develop 21st century learners through a personalised learning approach, with a shift towards student self-management and negotiation, towards a team approach to planning and teaching, and from pre-developed units of work to co-development of curriculum with the students.
>
> The *Colegio Karol Cardenal de Cracovia (Chile)* has developed a coherent framework in which students are key agents in setting the direction for their own learning. Children are heavily involved in making decisions in areas as different as organising learning projects, developing community partnerships, and overseeing and administrating the school's budget. The cross-curricular objective is to get active participation in the activities of the learning community and get ready to fully exert their rights and duties that are demanded by a democratic social life.

Mypolonga Primary School (South Australia, Australia) prioritises providing learners with opportunities to develop leadership skills. Student representatives participate in different school governing councils, and via these in some cases even in rural city councils.

Each educator involves his/her learners in a visioning process called the Community of Learners (*Community of Learners Network, British Columbia, Canada*). Through this process, the learners articulate the needs of the learning community, and the features that will need to be present for the learning community to function smoothly to meet the needs of all learners.

In *Instituto Escuela Jacint Verdaguer (Spain)* they believe that for students to play a leading role regarding their own learning, they need to get their own voice heard. Blogs are public and to be read and commented by their peers, teachers and families and at the request of authors themselves, a blog entry can become part of the school magazine *Ets i Tuts*.

CEIP Andalucía, Seville (Spain) introduces diversified resources, teaching methodologies, and especially the school builds its own classroom curriculum, counting on the democratic participation of students, and engaging with their cultural reality (Gypsy culture). The "tree of dreams" is one of the columns at the entrance of the school with the leaves of the tree being the dreams of students, families and teachers about the school they want. In the transformation process at CEIP, classroom meetings were held during which students took part in the formulation of coexistence rules.

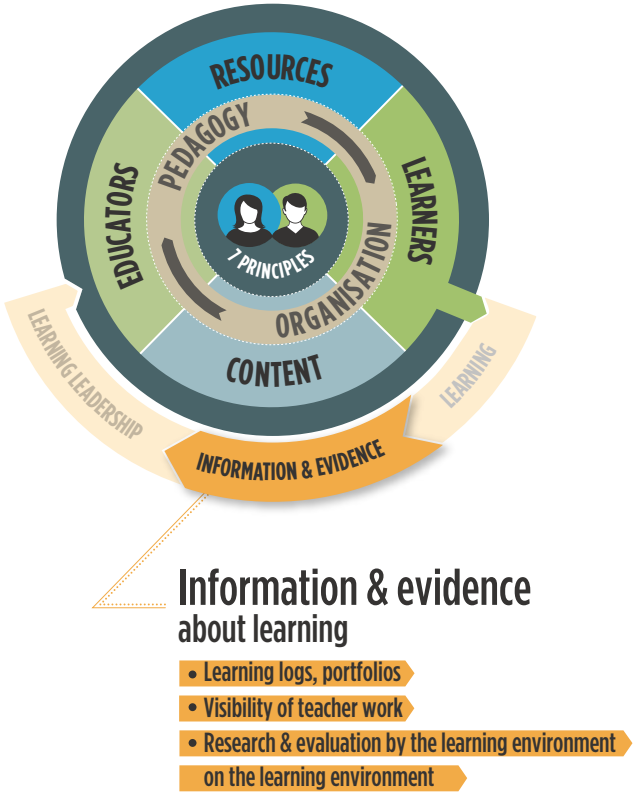
The idea of youth "voice" and its importance in creating an inclusive environment is also displayed through the *Royal Children's Hospital (RCH) (Australia)* partnering with the *Centre for Adolescent Health* to develop a young advisory council at the hospital. This council is known as Youth at the Kids (Y@K) and is comprised of members aged 12 to 20 years who work towards injecting youth consumer voice into discussions and decisions that affect young people's hospital experience. Y@K members have been involved in recent decisions on such matters as design elements of the new Royal Children's Hospital, the development of information brochures and a website, input into the Hospital's response to youth rights, and supporting a Youth Forum which attracted over 150 young people to contribute ideas to make the RCH a more child and youth friendly hospital.

The special nature of the enrichment programmes at *Rodica Primary School (Slovenia)* was that they were created together with pupils. Teachers accepted different educational needs of the learners and together with them discovered new routes to knowledge in the local and wider environment, through local and international exchanges among learners.

Formative learning organisations need extensive information about learning

Just as teachers need to be keenly aware of the learning taking place in the day-to-day teaching as part of a process of formative assessment that constantly shapes and reshapes that teaching, so do learning environments need to generate extensive information in usable forms to inform the design and redesign process. This may be described as "formative" or "evidence-based"; it also needs to be continuous and on-going rather than one-off assessment. As summarised in Figure 5.6 this includes information relating to learning activities and learners, as well as actual learning achieved.

Figure 5.6. **Information-richness about the learning taking place**



Learning logs and portfolios

Learning logs and portfolios, containing detailed records in accessible formats of student learning, are included in this chapter as well as elsewhere in the report to show the different means through which the learning environments become and remain "information-rich" about the learning taking place. Here, we focus on their more general role as part of the information systems of the learning environments.

> At *John Monash Science School (Victoria, Australia)*, the web 2.0 spaces are programmed to enable different levels of access for individuals. The staff have secure Google Docs to upload planning and other administrative documents. Students also have secure spaces. Both staff and students invite others to look at various pieces of work or feedback on work. There are also shared, public spaces for people to work virtually and collaboratively. This use of ICT has left a more visible trace of student learning, and has therefore increased pedagogical value.
>
> A central feature of *John Monash Science School* is the individual learning plan (ILP) which facilitates students' negotiation of their pathway through the range of curriculum offerings and is negotiated between the student and teachers. School online databases enable teachers to access students' performance data, including attendance and academic achievement, to which staff add online feedback and collected artefacts of student learning.

> We are learning to work with the amount of data we generate here. We already have a great deal before the students start, but given the way we work; we are continually amassing more and more. And, we are developing a very big picture of each student, so that we can counsel them in how to work more effectively, like whether they should try to get a bit more balance between study and leisure. (Teacher)

At the *Australian Science and Mathematics School (South Australia, Australia)* a key strategy involves the annual development of a Personal Learning Plan (PLP) as a way of tracking and planning of student learning, showcasing learning within the student-led Learning Conversations with parents and tutors and also in recent years, meeting the requirements of the South Australian Certificate of Education. The PLP is built as an electronic portfolio. Students include a wide range of digital demonstrations of their learning in the PLP and then create hyperlinks to other related pieces of their work. Word documents, spread sheets, animations, photos, movies, web pages, and scanned images are included as evidence.

The working journal is the main organisation tool at the *REOSCH (Bern, Switzerland)*. Beyond its use as a weekly schedule, it contains the pupil's personal data, information on the REOSCH diploma, and numerous organisation tools for the classes, e.g. an assessment sheet for the pupil's work habits, social and learning behaviour, and a list for tasks and achievement tests.

E-portfolios are used at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* to document student learning throughout their four years at the school. Students begin their e-portfolios in Grade 9 and continue to add to their learning portfolio throughout the remaining three years at the school.

Naturally, data management through technology becomes a natural choice, given the sheer volume and richness of the information on learning being generated and stored (see below). The teacher in the quoted passage refers to "learning to work with the amount of data we generate", and this process includes the learners themselves.

Research to enhance information and intelligence

Action research on different aspects of the learning environment is an important means both of developing teacher professional expertise and of generating crucial intelligence on how well the environment is functioning that may not be immediately obvious. In this, higher education research partners (see Chapter 6) may usefully be called on to supplement the expertise residing within the immediate staff.

In the *Community of Learners Network (British Columbia, Canada)* a key source of evidence is the case study analyses created by educators as members of the Network of Performance Based Schools in which educators collaboratively analyse the results of their inquiry work and "tell the story" of the learning taking place.

One of the unique aspects of the *Royal Children's Hospital Education Institute (Australia)* is that it develops and manages a portfolio of research projects alongside its education support model. The aim is to generate and disseminate a knowledge base to inform practice, programmes and policy in the education and health sectors. Research undertaken within the Education Institute encompasses five major themes (see Table 5.3).

Table 5.3. **Overview of Royal Children's Hospital "Education Institute research themes"**

Research theme	Overview of research theme
Learning spaces	Investigates what built environments are the most conducive to continued learning for children and young people removed from their own learning community through hospitalisation.
Technologies for learning	Focuses on investigating the use of different technologies for keeping young people engaged with learning and connected with their peers and school communities while in hospital.
Health and wellbeing	Considers the physical, social and emotional wellbeing of children and young people in a variety of different health and education contexts.
Inclusion and connections	Focuses on investigating the experiences of children and young people who are living with health conditions and developing respectful and supportive responses to assist them stay engaged in their learning pathways.

Source: OECD (2012). Inventory case study "The Royal Children's Hospital, Melbourne, www.oecd.org/edu/ceri/50358701.pdf (accessed 1 July 2013).

> One of the *Australian Science and Mathematics School*'s action research projects *(South Australia, Australia)* is focused on student retention: the teacher-researcher presented the findings to staff and improvements were generated including the development of an immersion process. Almost 100% retention occurred in 2011, seen as due to the improvements to transition, including additional preparatory observation days with buddies and increasing the support provided by the Tutor.

The action learning approach at *Valby Oppvenkstsente (Norway)* involves the use of personal logs by staff members which has become an important part of their own learning taking place, as reviewed earlier this chapter. It also contributes to more collective learning:

> The continuous systematic reflection and learning also contributes to a common culture. First, action learning becomes institutionalised as a shared model for continuous learning and development. Second, staff meetings become a professional forum for finding solutions that accommodate shared core values. Third, the meetings became a valuable arena for the principal to exercise practical leadership.

Data and information systems

The priority given by the learning environments to being informed by the learning taking place is especially clear when they have put in place data and learning management systems. These are not as an alternative to learning leadership, i.e. the data system does not drive decisions about learning and teaching, but they provide invaluable information to help manage organisations that become more complex the more they move away from being fragmented, individualised schools and classrooms and adopt instead "The Nature of Learning" Principles, combining at once collective working methods and individualised learning aims.

There are different uses for data information systems that emerge from the example extracts below (even if in reality they tend to co-exist): they generate key information or intelligence for use by teachers and leaders and they are platforms where learners upload content, work, or use discussion boards.

> At *Instituto Escuela Jacint Verdaguer (Spain)* the main instrument designed by teachers for the preparation of teaching units and materials as well as for communication and student monitoring is AULA: a virtual space in a Moodle

environment. Its structure is based on the organisation of learning of the school. Activities include project work, working plans, webquests, treasure hunts, lessons, readings, systematic homework, evaluations, etc. Apart from versatility, other advantages are: large data storage capacity; teachers sharing activities; new teachers can easily consult, change and carry out the activities; students' work is registered, which facilitates its monitoring and evaluation. It gives coherence to both the learning process and the pedagogical approach of the school.

At *Mevo'ot HaNegev (Israel)* there is extensive use of ICT, with an online learning management system ("virtual campus") where teachers and learners communicate and store learning products and content. All learners and teachers are equipped with a laptop allowing activities in the Learning Management System (LMS), in which they work actively on various projects.

The *Australian Science and Mathematics School (South Australia, Australia)* innovative virtual environment provides 24/7 access to the learning community and incorporates three inter-related components: content management for collaborative work such as discussion boards and blogs; learner management where the curriculum is matched against learning goals, and access to learning resources including text, pictures and video, and student management in which departmental data are enhanced with anecdotal and grade data. The virtual classroom means that every learning area topic and student group has an area for materials such as learning modules, assessment plans and learning goals, resources and wiki blog discussions. Parents can also access this area, view their child's attendance and assessment records and communicate electronically with the relevant teachers.

In *Miwon Elementary School (Korea),* the teachers created student cards that document each student's profile, including the country of birth, the length of residence in Korea and other countries, the level of proficiency in Korean and other languages of the students and their parents, the parents' description of their child's personality, learning, and health and advice to homeroom teachers. These cards also include information on their specific difficulties and needs, as well as their learning progress. They were thus used as a database for providing more effective education for the students. Miwon has fully utilised ICT and a cyberspace especially created in the school homepage and designated for multicultural education. They can download learning materials, write and upload their project papers to share learning outcomes, and communicate with their teachers to get feedback and ask questions on meeting boards online. Teachers and parents also exchange information and discuss concerns regarding their children on the homepage.

E-classrooms in *Internet Classroom, Kkofja Loka Primary School (Slovenia)* enable teachers to gain a complete insight into their pupils' activities: when and how much time they spent in an e-classroom, which sources they were reviewing and which activities they performed. Teachers have become increasingly burdened with paperwork: the e-teachers staff room makes it easier to master documentation as it contains all documents, forms, reports that teachers need for their work and it enables also the e-filing. The school leadership has an easier task to collect data through information at and the opportunity for communication within the e-teachers staff-room.

All of the assessment tasks and diagnostic testing data are collated on the *Courtenay Gardens Primary School (Victoria, Australia)* "Assessment Tracker", a database that records student performances on tests and indicates skills and knowledge across different domains of learning. Teachers can earmark students of concern, or those who require additional attention. A year-level co-ordinator is responsible for ensuring that all teachers' student data are uploaded in a timely fashion. At a glance, teachers are able to identify which students require any further assistance and thus are able to generate Individual Learning Plans (ILP).

The nature and quality of the teaching activities undertaken by the *Education Institute* in Victoria is documented through daily entry of data by the teachers into an electronic database. This database includes information about the children and young people who have been supported, the type of support provided and an indication of whether teachers consider that a referral is needed for additional support. Such data provide the Education Institute with an on-going, up-to-date account of all children in the *Royal Children's Hospital (Australia)* who have received direct educational support and what this support has entailed. It therefore allows for reporting and accountability and continuity of care and support for children and young people who have long-term and/or frequent admissions to the hospital over time.

The information generated may also be made available to parents so that they can follow their child's progress on a day-to-day basis.

At *Lakes South Morang P-9 School (Victoria, Australia)* a collaborative data storage system is available for sharing documentation, assessments, etc. among teachers, thereby facilitating the sharing and take-up of good practices among peers. To provide on-going access to student achievement to parents and students, the school district uses a web-based student information system, PowerSchool™. This information system is used to provide both summative and formative information to students and parents on a daily, weekly and interim basis. The students referred to how much their parents used the online student information system.

The key role of feedback and redesign

How the information generated on learning is used in the day-to-day operations of the learning environment has already been described but for evidence about learning to impact on the design of the learning environment, requires that this information is fed back into and reflected upon by the learning leadership (Figure 5.7). This is an on-going process but certain of the project cases report how the feedback and reflection process is more formalised. Some refer explicitly to the cyclical and on-going nature of change.

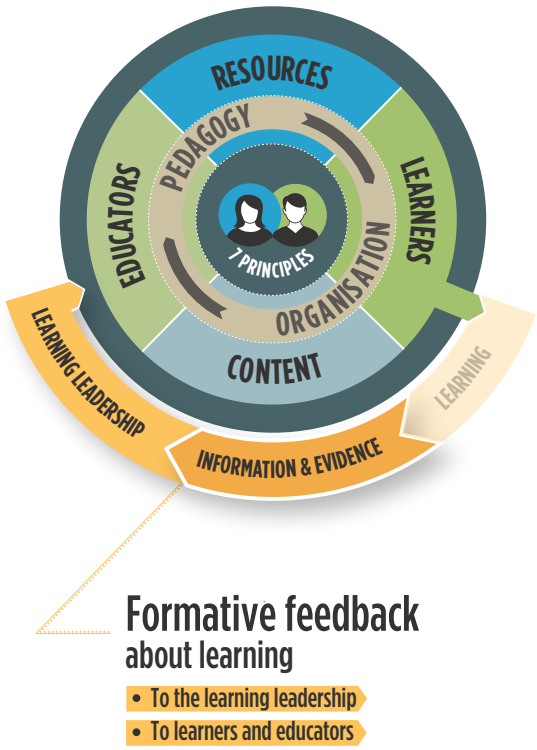
At the end of each term at *CEIP Andalucía, Seville (Spain)*, participants of the different classes jointly carry out an evaluation of the functioning of interactive groups. At the end of the year, a general evaluation is conducted, in which teachers, scholarship holders and their co-ordinators, volunteers and university students, etc., all participate. They prepare reports on those things that went well or badly, with corresponding proposals for improvement.

The *Breidablikk School (Norway)* introduced certain cornerstones to secure the sustainability of the innovation:

- Continuous evaluations, both internal and external on-going experiences and new issues are dealt with along the way and there are surveys covering both pupils and parents.
- A digital evaluation system for parents to evaluate and liaise with teachers, together with pupils.
- New reporting systems for what has been achieved within different disciplines, and the distribution of time between them, to ensure that different subject-specific practices do not undermine overall and shared learning objectives.
- Closer co-operation with parents and pupils, by involving their associations more closely in the everyday running of the school. This arrangement is important to secure support and clarify duties and obligations between the parties.
- A working group of pupils makes proposals for teaching areas, including practical teaching methodology based on interests.
- Formal documentation of methodology, on paper and digitally, is carried out through the whole period.
- Increased responsibilities for teachers are secured through commitments to specific plans and implementation of evaluations in accordance with these.

The *Jenaplan-Schule (Thuringia, Germany)* concept of evaluation and development is consistently well thought through, from instruction up to the development strategy. In addition, evaluations are also regularly carried out by two external

Figure 5.7. **Feedback in formative learning organisations**



observers, when specific questions are raised in advance and development priorities are discussed with the entire staff. A further external evaluation concept is connected with the "View Over the Fence" ("*Blick über den Zaun*"), involving mutual partner visits as "critical friends" to support the school's development.

The plans and existing elements of school development at the *ImPULS-Schule (Thuringia, Germany)*, are presented the whole year on the school floor. Everyone, participants and also guests, can see them. It has organised school development around the following elements: interdisciplinary lessons; character, media, competence development; differentiation to foster individual needs and competences; learning strategies; co-operation between school and economy; school community and partners; teacher co-operation; parent co-operation; concept development; evaluation; personnel development and the development of the school organisation. The whole self-monitoring and self-evaluation concept is a circuit process of planning, monitoring and evaluating.

Looking over the longer term, some of the case study innovative learning environments are conscious of the on-going cycle of design and redesign that unfolds over time, and can lead to transformation when the innovation is sustained. Time is a key dimension of the environmental approach even within a single cycle of the formative organisation learning from its own learning. To see the learning environment as an eco-system assumes the passage of time. The integral importance of time is still more obvious when that extends to further cycles of learning and redesign.

The school faculty at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* understands their planning and practice as continually growing, strengthening and evolving. One teacher stated, "I'd like to begin by saying we are at the infancy. We are in a transition phase. We are still moving away from yesterday and moving into tomorrow."

Valby Oppvenkstsenter (Norway) has been part of several development projects and programmes from 2000 until today, embodying the "never-ending-story" approach to school improvement.

The transformation into a learning community at *CEIP Andalucía, Seville (Spain)* can be understood as involving a set of stages under the broad phases of implementation and consolidation. First, there is implementation: 1) raising awareness, 2) decision-making, 3) dreaming ("the school we want"), 4) prioritising, and 5) planning. Then, there is consolidation: Research, training and evaluation. As regards implementation, after the raising awareness stage, the Teachers' Assembly and the School Council decided almost unanimously to initiate the transformation process into a learning community. The approval by families ended the decision-making process. The dreaming stage involved all in coming forward with dreams: learners, teachers, volunteers, families, and the administrative and service staff. In the second term, the cataloguing, synthesis and prioritising of dreams began. Students of the different classes prioritised, and so did the teacher teams, and the families through surveys and two meetings. The commissions were charged with establishing the steps needed to make short, medium and long-term dreams come true – the planning stage. Up to the present day, the learning community project has continued being consolidated by repeating the different stages every year through this participatory research-action process.

In 2010 the renewed approach to pedagogy and learning spaces for Year 7 students at *Mordialloc College (Victoria. Australia)* can be described as having passed through the "design" and "implementation" phases of innovation, and moved into the "consolidation phase" where practices have become institutionalised. This reflects a major commitment by the larger school community to embed the innovation in the school culture. Moving from consolidation to sustained innovation and evaluation is the current focus for the drivers at the school (in the words of this report the "learning leadership").

Concluding summary

This chapter looks at how learning environments develop over time in line with strategies and designs that maintain (ideally strengthen) learning as the central preoccupation and realise the ILE learning principles. This we describe as "design/formative organisation/redesign".

In this continuous cycle, leadership is essential to ensure that particular learning designs are put in place. Educator engagement and teacher professional development are key aspects of the design process. Learners themselves are also prominent partners, discussed in this chapter under "learner voice". For the learning environment to be a formative organisation, it needs to be highly informed about the learning taking place within it and thus "information rich". For that rich information to inform further growth in the learning environment it must be fed back, processed and strategically used: hence, "redesign".

The innovation in learning organisation seen across the ILE cases goes beyond incremental progress but has called for learning leadership. There are strong articulated visions of what needs to change in terms of learning, often based on diagnosis of what is not working well. Charisma is certainly in evidence in helping to drive change and convince unwilling partners and professionals to come on board, but leadership that is not distributed is highly fragile. The learning leadership requires vision but it necessarily requires strategies to realise those visions and to take them "off the drawing board".

The ILE learning principles can be translated in terms of what they mean for educators: this means an expansion of teacher professionalism to embrace new repertoires. Distributed learning leadership calls on teachers to play a central role in identifying designs and making them happen and hence teacher learning and engagement are critical. The case study innovations place considerable importance on teacher professional development, especially that which contributes to the organisation-wide priorities and strategies.

"Learner voice" can be an important part of the on-going formative cycle when the learners themselves are actively engaged in decision-making rather than this being left only to the leadership, teachers, support workers and other partners.

Information richness as reviewed in this chapter includes learning logs and portfolios, containing detailed records of student learning in accessible formats that can become a basic organisational tool. It includes research on different aspects of the learning environment that is important both for developing teacher professional expertise and for generating intelligence on how well the environment is functioning and suggesting potential solutions to problems arising. Data management systems are naturally relevant, and can provide invaluable information about learning, not as an alternative to learning leadership but to inform it.

The generation of such extensive information about learning through whatever of these methods requires that this information be fed back into and reflected upon by the learning leadership. To work, this means that the feedback and reflection process is deliberate, not haphazard. Some of the innovation sites in this study refer explicitly to the cyclical and on-going nature of change, that involves design and redesign that only unfolds over time, and can lead to transformation when the innovation is sustained.

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Chapter 6

Extending learning environments through partnerships

Contemporary learning environments will not be sustained by working in isolation but instead need to be connected to diverse partners, networks and professional communities. When learning environments partner with higher education, they can benefit from the expertise on offer but the benefits can work both ways. Similarly, the cultural and social partnerships extend boundaries by offering access to cultural materials, experiences and different teaching expertise. Corporate partners include local or larger businesses, and also different foundations. Families and communities can become real partners, entering into the pedagogical core via community teachers, resources, and content, and through project-based pedagogies that depend on community engagement. Networking with other learning environments is critical, and mutually beneficial. Some will depend on technology to collaborate with others at a distance while others will rely on more direct forms of face-to-face dialogue and action. As exemplary, some become beacons and sources of professional learning for others.

Introduction

Creating wider partnerships is an outstanding feature of our innovative cases. They have an urgent drive to avoid isolation and awareness that significant innovation cannot be achieved and sustained alone. They look to build and maintain the capital they need as organisations – social capital, intellectual capital, and professional capital (Hargreaves and Fullan, 2012) – through forging alliances, partnerships and networks. They extend themselves beyond given institutional and organisational boundaries, and introduce their learners to a range of other possibilities and resources.

Important though networks and partnerships clearly are, learning leadership as discussed in the previous chapter becomes especially important to ensure that the acquisition of partners is not the incoherent quest for publicity, programmes and partners *per se*. That would be the "Christmas Tree" phenomenon as described by Bryk et al. (1998), of acquisition and showcasing without any coherent strategy and without advancing the learning.

In this chapter, we examine how the different cases draw especially on three forms of partnerships: higher education and corporate and cultural partners; families and communities; and other learning environments with whom they connect up through a variety of networking arrangements. We also see how, on the one hand, the partners enter right into the core of the learning environments while, on the other, extending the environment boundaries outwards.

Partnerships with higher education, business, and cultural bodies

Partnerships contribute importantly to many of the innovative cases. They extend in key ways the resources and expertise available to the learning environment, and blur established institutional boundaries so that the learning is not restricted to that which takes place within the institution narrowly defined. The range of some of these partnerships is such that three examples are reproduced in full to illustrate just how extensive they can be.

Jenaplan-Schule (Thuringia, Germany) co-operates with diverse institutional partners in the city and region. Prominent among the partners are: Goepel electronics, the Planwerkstatt, the Schiller House, the Romantic House, the One-World-House, the Public Radio Channel Jena, the public cinema in the Schillerhof, Kommunal Real Estate Office of the City of Jena, the Ernst-Abbe Public Library, the University of Applied Sciences Jena, the University of Jena, the EJBW, the Protestant Adult Education Thuringia, the Philosophia e.V., the Imaginata, the Heritage Office, the City Museum Göhre, the Diskurs e.V., Grund genug e.V., the Theater House Jena and the German National Theatre in Weimar.

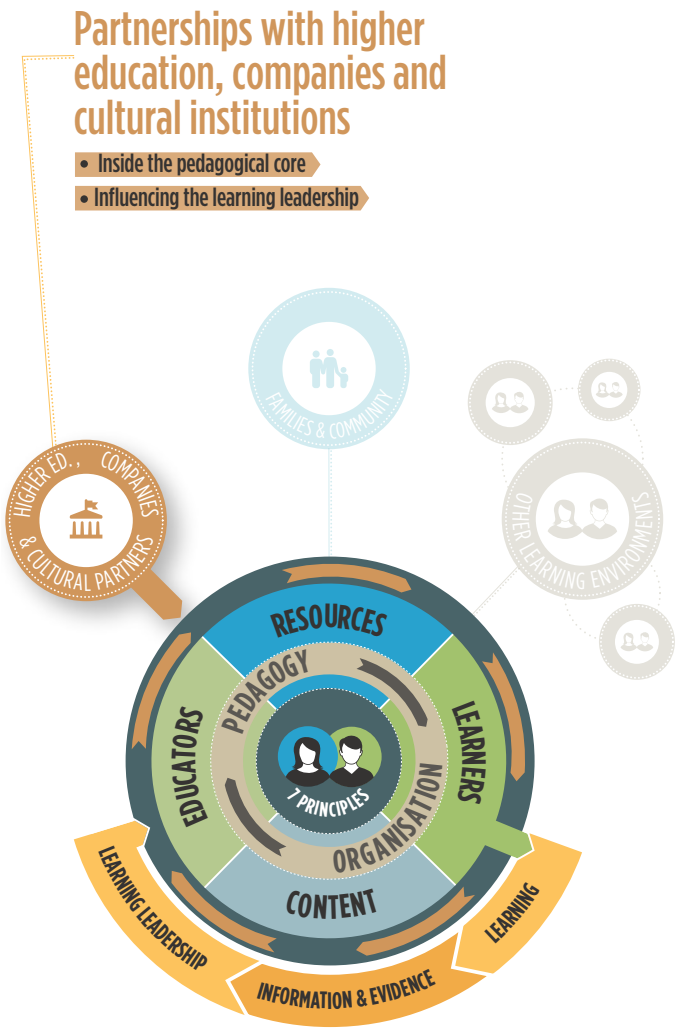
The starting point of *Liikkeelle! (On the Move!) (Finland)* was an initiative of the Finnish National Board of Education, which attracted the attention of the town of Kalajoki and the Science Center Heureka. They applied for the funding together, building on existing social networks and good practices. An important further partner has been PaikkaOppi (in English, Location Learning), which collaborated in developing the interactive virtual map (their primary aim is to produce an interactive map for supporting the teaching of geography, geographic information system (GIS), and environmental studies in schools). The template for the map came from National Land Survey of Finland. Other partners are the Universities of Helsinki and Oulu who have helped to create new teaching methods, such as Time-space-paths, and a jointly organised course for student teachers of the arts and upper secondary school students. In addition, the universities have

contributed by studying Liikkeelle! and producing scientific knowledge and a survey report about the project. Commercial actors are also involved to further develop the virtual environment in accommodating the needs of teachers and learners.

A range of institutions collaborate with *CEIP Andalucía, Seville (Spain)* in different ways: the Cajasol Foundation (the Foundation subsidises library activities), RENFE (the Spanish railways network finances the travelling expenses of some students to Madrid), the Universidad de Sevilla (teachers and students of the Faculty of Psychology do some hours in the school, in exchange for credits, and participate in interactive groups), and the Universidad Pablo de Olavide (scholarship holders of the Flora Tristán student residence and some teachers take part in interactive groups and in workshops, mainly in the radio).

The extensive partnerships that these learning environments have developed cover the main higher education, business and cultural players that are referred to in the pages that follow, sometimes public, sometimes private.

Figure 6.1. **Higher education, corporate and cultural partners**



Higher education partners

Partnering with a university can offer an important extension of research capacity to a learning environment, enriching its own knowledge about what it is doing. Action research is one of the ways in which learning environments are becoming information-rich to inform their on-going process of learning design and redesign, as discussed in the previous chapter. Universities can be very helpful in building the capacity and expertise to do this.

> The *Narrative learning in play environments (Silmu), University of Oulu (Finland)* is a "research laboratory of play" of a university research centre for developmental teaching. The learning environment of this early childhood education centre is enriched through the university's research on children's play, while in turn student teachers at the university are able to gain hands-on training at the play club.
>
> The way groups are formed is such a determining factor for students' learning and personal development that *Instituto Escuela Jacint Verdaguer (Spain)* embarked on a project with the University of Barcelona to produce socio-grams. Once data have been analysed, university experts suggest ways of organising the groups so that results are optimised and students can develop all their abilities.
>
> *Europaschule Linz (Austria)* co-operates closely with a nearby teacher training college, which leads to a high level of participation in research projects. Guidelines for modern education are based on the latest research results with regard to methodology and didactics, as well as learner skills, aptitudes and needs.
>
> The research practice on the *Enrichment Programmes*, *Rodica Primary School (Slovenia)* was formalised by connecting to the Slovenian National Education Institute, which appointed an expert consultant to monitor the work and provided professional support.

Underscoring that the partnerships with universities may be mutually beneficial, the experience of *Valby Oppvenkstsenter (Norway)* and the *Australian Science and Mathematics School (South Australia, Australia)* suggests that equality in the relationship can develop as the partnership matures.

> Co-operation with a research environment was initially based on the idea of action learning as a school improvement tool at *Valby Oppvenkstsenter*. Now, the co-operation works more reciprocally. The school benefits from having an external pedagogical coach/counsellor from the nearby teacher training college and all the teachers study counselling at the college during the year, while the students from the college do their practical courses at Valby.
>
> The early establishment phase was underpinned by a formalised agreement about use of facilities and about connections between Flinders University and the *Australian Science and Mathematics School* staff and collaborative development of teaching and learning materials and curriculum. Curriculum electives were initially offered by the academics with ASMS staff participating in the sessions. Over time, however, the relationship became more a collaborative partnership: "now it's a more sophisticated relationship as equal partners" (academic).

Often, the university partnerships are developed so as to provide teacher education, professional development and internships, and the wider sharing of practice. Universities and colleges enable some senior school students to take college-level courses, thereby extending the content and challenge for those particular learners. The educational

partnerships may be forged with different agencies that are neither connected through the requirements of governance nor as parallel learning environments (discussed later in this chapter). In other words, a rich variety of educational partnerships may be established for a rich variety of possibilities; all are illustrated in the extracts that follow.

A key community connection for the *Community of Learners Network (British Columbia, Canada)* is with the local university, Vancouver Island University. The university and the school district have entered into a partnership to share physical and human resources in the support of student learning. Cohorts of student teachers have been moved into public school classrooms so that student teachers and K-12 students can learn from each other on a regular basis. Teacher education faculty have partnered with classroom teachers to learn from each other. The university also offers many rich venues for K-12 students: the computer labs, science labs, theatres and art galleries on campus have been the sites of many student visits.

The *Royal Children's Hospital Education Institute (Australia)* works in partnership with departments of the Royal Children's Hospital, the Victorian Government Department of Education and Early Childhood Development (DEECD), the Catholic Education Office, Independent Schools Victoria, and other RCH campus partners (such as the Murdoch Children's Research Institute and The University of Melbourne). The Institute also receives philanthropic support and has forged partnerships and collaborations with different organisations (such as with DEECD, Soundhouse, Livewire and the KOALA Foundation), to obtain a large variety of ICTs.

Community Learning Campus (CLC), Olds High School (Alberta, Canada) students take many of their Career and Technology Studies (CTS) courses such as fabrication in metals, welding, carpentry, etc. at Olds College, Alberta. This type of programme has become dual credit, earning credit at the school and the college at the same time, and the aim is for all students to have at least one experience in post-secondary during their high school years.

The *Lok Sin Tong Leung Wong Wai Fong Memorial School,(Hong Kong, China)* has joint partnership with different professional organisations, such as:

- Education Bureau HKSAR (Mathematics Program, Visual Art Resources Centre)
- Distance Learning Club (distance learning programme with Mainland China)
- The Hong Kong Chinese University (Healthy School Program)
- The Hong Kong Institute of Education (Small Class Teaching Pilot Project and Small Class Teaching Leadership Project)
- Hong Kong Shue Yan University (Counselling internship)
- E-class partner schools (to promote e-learning and e-lessons)
- The International Alliance of Invitational Education (project school)
- Battelle for Kids USA (Assessment for Learning).

These organisations belong to different local and overseas education sectors, including the government, tertiary and school. It is not common to find schools in Hong Kong entering joint partnership with so many organisations of other education sectors.

There can thus be clear advantages in drawing on the expertise and capacity offered by the higher education institution. But the benefits can work both ways, as innovative ideas and practices in turn percolate up to the university level and the educational research, teacher education and service missions of the university become well served by such partnerships.

Hybrid learning environments

Once the perspective goes beyond learning understood exclusively as formal schooling, the way is also open for consideration of hybrids. Zitter and Hoeve (2012), in a report prepared for the OECD/ILE (Innovative Learning Environments) project, see the focus on hybrid environments as natural given that school-based learning has become more informal (with elements such as authentic assignments, project-based learning and in-school mini-enterprises – discussed in Chapter 5), and that non-formal learning has been increasingly formalised by means of recognition of prior learning and the use of portfolios (Tynjälä, 2008). This has led to a process of cross-fertilisation leading to new forms of learning that integrate aspects of both formal and informal learning. These, for Zitter and Hoeve, are "hybrid learning environments" that "interweave learning and working processes to benefit from the strengths of both formal, school-based learning and from real-life experiences." From our own cases such an example can be found:

> In the *Centre for Studies on Design at Monterrey (CEDIM) (Nuevo León, Mexico)*, the college works with enterprises who submit "real-world" projects which student teams then work out.

Are these simply examples of good partnership? Not in the sense in which Zitter and Hoeve define "hybrids", as the different formal and non-formal elements are woven together into coherent programmes of learning and into single learning environments, rather than a programme that combines different components with the aim of offering a more enticing menu of learning for the students. In other words, the demands of partnership go further and change the identity and leadership of the environment itself.

Corporate partners

Some of the corporate partnerships may be the conventional community links of businesses helping through a funding or sponsorship role, but they may be much more about the learning that takes place as well.

> The *Lobdeburgschule (Thuringia, Germany)* co-operates with many regional partners. This includes membership of "Berufsstart plus" (a project for the transition into vocational training) of the Eastern Thuringian Apprenticeship Network. Further co-operation partners are: Eine-Welt-Haus e.V., the car dealer Reichstein and Opitz GmbH, the Bildungswerk BAU Hessen-Thüringen (educational institution), the JBZ (education centre in Jena), DKJS Regionalstelle Thüringen (regional office of the German Children and Youth Foundation), the University of Applied Science of Jena, the "Lobdeburgschule" e.V (registered association), the International AKademie INA gGmbH, the University of Berlin, the University of Jena, the Jenaer Antriebstechnik GmbH, the Kaufland Jena-Lobeda, Kindertagesstätte "Anne Frank" (day care centre), the KOMME e.V. of MEWA Textil-Service AG und Co. Jena OHG, the MoMoLo e.V., the vocational training centre for health and social issues, the Theaterhaus Jena gGmbH (theatre), the adult education centre Jena, and the vocational training centre in Jena-Göschwitz.

> The South Australia department Chief Executive at the time supported the idea of a specialist secondary school and indicated a major purpose of the *Australian Science and Mathematics School (South Australia, Australia)* being about ensuring a "new vision of careers that involves mathematics, science and technology and to design and develop new curriculum". His additional purposes were to "establish new relationships with scientists, university staff and industry" and "transformation of the way in which the fundamentals of science and technology are viewed in the community, linking them to both the new sciences and to a culture of innovation and entrepreneurship".

The Thuringian examples from Germany show how compatible may be business and an "alternative" approach to education. These learning environments are highly influenced by progressivist ideas, as discussed in Chapter 5. Yet, far from meaning that they avoid corporate partners and that the corporate partners avoid them, instead they work closely hand in hand. The interdisciplinary lessons, for instance, may depend on the connection to the working and business world.

Corporate partners may importantly include different foundations. They have already been mentioned *inter alia* in the examples taken from the *CEIP Andalucía, Seville (Spain),* the Cajasol Foundation subsidising library activities and the *Royal Children's Hospital (Australia)*, which enjoys a partnership with the KOALA Foundation. The foundations may be one in the portfolio of partners or its role may be more central: both are illustrated in the following extracts.

> When household income is low and hence students need support, *Instituto Agrícola Pascual Baburizza (Chile)* gives scholarships which can be used to have access to board school and for student's accommodation. The Luksic Foundation plays an important role because it provides financing for the support for students and scholarships to many of them.

> A range of partners provide low cost or free services to the *NETschool (Victoria, Australia)*. Bendigo Community Telco supplies free internet service to student homes, with support from a help desk. NETschool has also garnered support from IBM Australia and the Rotary Club. St Luke's Anglicare provides case-work support and facilitates relationships with other agencies. It has received funding from the Commonwealth Government to support Healthy MOVE, a project to promote personal development and community connection. The Sidney Myer Foundation enabled a maintenance room to be converted into a metal bending room so that products such as wine racks could be built and sold as a student enterprise.

Cultural partners

Cultural partnerships can be very useful in extending the boundaries of the learning environment beyond formal school provision, and in offering access to arts materials and experiences directly. As in the case of Fiskars, the artists and craftspeople become part of the educational workforce, too.

> The *Fiskars Elementary School (Finland)* may be defined as an enlarged learning environment. The basis for the model and its central working method are the workshops that are developed, and organised in co-operation with such actors as the Artisans, Designers and Artists Co-operative of the village of Fiskars.

Thanks to the cultural offer of Sant Sadurní D'Anoia and other nearby towns, all students at *Instituto Escuela Jacint Verdaguer (Spain)* annually attend a performance of each artistic discipline – music, dance and theatre – visit exhibitions and have similar cultural experiences.

The *Culture Path programme (Finland)* has been implemented in close collaboration with the city's cultural institutions, schools and teachers, as well as other relevant interest groups such as the Eastern Regional Center for Dance, Children's Cultural Center Lastu, many cultural associations, and private culture activists. The project aimed at producing a service that would be easily accessible, and which would enable both students and teachers to experience culture and art as a source of learning and enjoyment. It has nine paths – Library, Art, Museum, Media, Environment, Dance, Music, Theatre and K-9 card – one for each grade level. With the K-9 card, a 9th grader can use the city's cultural services for free, or at little cost, after "trekking" for eight years on the Culture Path.

These, and the earlier examples of partnerships with museums, galleries, and theatres, but also with radio and media companies, extend the materials and the means of learning as well as the different professionals involved.

Families and the wider community in partnership with the learning environment

Chapter 2 showed how a number of the innovative learning environments in our case study set have widened the understanding of "learner" to include parents, especially (though not exclusively) in situations of disadvantage and low cultural capital. Chapter 3 discussed how innovation may include widening the profile of teachers, and one means of doing this is by bringing in parents as teachers or in the support of teachers. In other words, parents may come right into the learning environment's "pedagogical core". Similarly with local communities, they can be invaluable in extending the resources available to the learning environment, as well as strengthening social capital for the benefit of the learning environment and the community alike. Families and communities can act as learners (parents and other adult community members); they can also provide learning resources, contribute to the educational workforce, and help to shape learning leadership.

Parents as partners

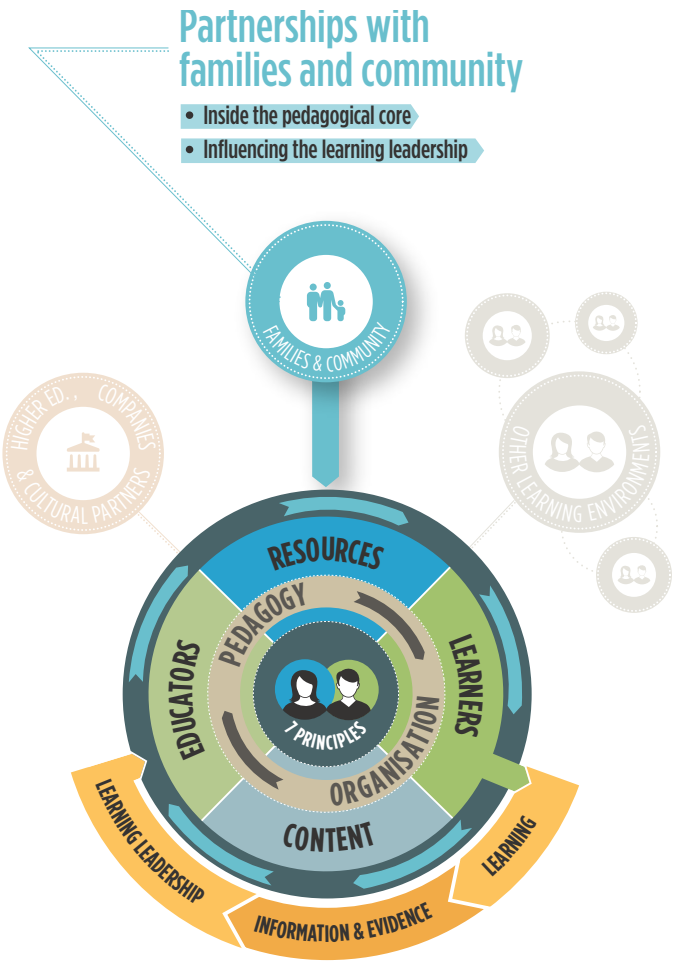
In this chapter, we refer to some of the ways in which parents and families are made part of the learning community and thereby strengthen it. There is nothing unusual in this, of course, but that familiarity does not diminish the importance of strong parental links in creating and fostering the general learning community.

The *Jenaplan-Schule (Thuringia, Germany)* requires and counts on the active co-operation of parents. Monthly round table meetings give parents the opportunity to discuss group-specific problems with the teachers. Regular discussions and consultations between parents and teachers help support the child's individual development. Parents are invited to get involved in classes, and they can also help with the design and management of classrooms, learning materials and the school building. The school also encourages parents to co-operate with other parents and their children outside of the classrooms in teams. Finally, the parent involvement led to a newspaper called the "Parents Circle" being published by mothers and fathers to inform a wider public about Jenaplan School directions and activities.

The *Colegio Karol Cardenal de Cracovia (Chile)* is located in one of the poorest neighbourhoods in Santiago and offers a wide range of activities to parents. Parental participation is fundamental. The principal declares that parents are not "clients", as can be the case in some schools in Chile, but are active partners. Many parents and guardians say that one of the reasons why they took their children to this school was for the diverse group of activities that the school offers to their parents. "For example we celebrate Mothers' day, the Children day, the day for the Show Searching for a Star, and then these activities become well known and create a special buzz about the school. The parents get to understand that here they are listened to" (Parent). As said another parent proudly: "I am a Karol mom".

Parents were invited and encouraged to attend information sessions in each community in order to help them understand what this innovative learning environment – the *Elementary Connected Classrooms (British Columbia, Canada)* – would look like, the format it would take and how they, as parents, could be involved. As the school year progressed, parents were trained in how to use Moodle at home since students would need to use it in responding to questions and completing assignments; parents were taught how to monitor their child's responses, and how to work with them on assignments.

Figure 6.2. **Families and communities as partners**



> There are monthly meetings at *Instituto Escuela Jacint Verdaguer (Spain)* for the co-ordination of the management team and Parents' Association, the so-called "recipes to educate", where both families and teachers think about the education of their children, the participation of families in the school workshops, trips, traditional festivities or festivals organised by families themselves, the "information sheet" to inform about good attitudes, or the appointment of fathers and/or mothers as class representatives to improve relationships and mediate.
>
> Both the involvement of families and the commitment of the basic triangle school-students-families are specified in a contract signed by the three parties at the beginning of each year. The contract includes the commitments assumed with the signing of the document, as well as the internal rules establishing the appropriate disciplinary measures the commission for coexistence might take (*Jacint Verdaguer*).
>
> The Spanish researchers responsible for the Catalan case study confirm that the "positive attitude and common work might be one of the key elements of this successful learning environment. The educational team becomes a model of doing and seeing things which is transmitted to students and families." In *Jacint Verdaguer* this goes so far as to involve a contract with parents and their children signed at the beginning of each year.

The Korean school that depends on parents from cultural backgrounds outside Korea is innovating its "pedagogical core" by involving these parents to extend content, learning resources, and the teacher force.

> Migrant parents volunteered as instructors for the foreign language classes and taught their own languages to Korean-only, mono-cultural students at the *Miwon Elementary School (Korea)*. Students, teachers, and parents designed and produced teaching materials for multicultural education, including different kinds of Korean language teaching materials and video learning materials for Japanese language classes such as story-telling, singing children's songs, acting in plays, and a musical produced in a foreign language. All of these activities effectively raised the pride of both the students and parents of Miwon from both migrant and Korean mono-cultural families.

In the case of the *Itinerant Pedagogical Advisor (API) programme (Conafe, Mexico)*, the extension of the learning environment that the advisor represents would be impossible without the active support of the families, despite these being remote and resource-poor communities.

> While he is in *Netzahualcoyotl, Los Coyotes*, Ramiro sleeps in a classroom that is no longer being used as such even though the families of the students have offered to give him shelter in their houses. The parents of the students feed him: everyday he eats in a different house. He is thankful for the support the community has shown since the first day he arrived. Part of the support the advisor provides consists in going to the students' homes after school. These visits enable him to see for himself the conditions in which they live, meet members of their family and see the conditions in which they do their homework. During his visit, he helps students do their homework and guides their parents so that they learn how to help them too. Since parents rotate in feeding both the advisor and the instructor, he also gets a chance to visit all students' houses in a more informal manner and uses the opportunity to discuss family involvement in education.

The programme does not leave these relationships to chance but has created a Guide: *Familia y escuela. A generar un futuro mejor* (*Family and School: Creating a Better Future*); this guide describes activities to use during meetings with parents, with reminders regarding the particularities of working with adults and the aims of the interventions.

Building the learning community through strengthening community links

Earlier chapters have examined how certain of the innovative learning environments have been founded on establishing a model of a learning community in which the wider geographical community is an integral part: two good examples are *Yuille Park P-8 Community College (Victoria, Australia)* and *Olds Community Centre* in Alberta, Canada. They are good examples as well because they differ markedly in terms of affluence and the cultural capital they possess – i.e. affluence is not the limiting factor of community engagement. It is striking how important can be the latent social capital even in seemingly poor or antagonistic communities when it is channelled to the service of the learning environment. Nowhere, among the project cases, has this been clearer than in *CEIP Andalucía, Seville (Spain).*

> Before the teaching team committed itself to the transformation, there was a mutual rejection between students and their families and the teachers. The confrontation between the school and the neighbourhood, between social and school culture, was clearly reflected in the border between those two worlds, the school doors: "every morning, when teachers were going inside the school, we had to quickly pass with our heads down so as not to hear the daily insults. There were occasional physical aggressions. And this relationship was the main reason for the school to firmly close its doors once the children were inside, so that nobody could come in to annoy us" (School principal).
>
> It was necessary to generate a new school and social culture, creating, first of all, a new professional culture and identity of teachers which reinvents teaching so that it goes beyond the traditional school approach. Nowadays, there is much more empathy towards, and involvement, knowledge and recognition of, the Gypsy culture. The initial transformation plan, with the support of the Teacher Centre of Seville, was presented and subsequently approved and implemented. They continued with the working group on Gyspy culture, which used the school newspaper *Nevipens Andalucía* as one of its communication tools. In collaboration with Unión Romaní, training courses were annually organised on topics suggested by the Teachers' Assembly: conflict resolution, Gypsy families in the neighbourhood, project methodology, teaching units, etc. Many different civil society associations collaborate with CEIP Andalucía: Entre Amigos (Among Friends), Unión Romaní de Andalucía (Andalusian Romany Union), Deporte y Ocio 2001 (Sport and Leisure 2001), Emisora Cultural Canaria (a cultural radio station of the Canary Islands), Mujeres Progresistas (Progressive Women), Mujeres Gitanas Akherdi Tromipen (Gypsy Women Akherdi Tromipen) and Mujeres Gitanas Universitarias Fakali (University Gypsy Women Fakali). These associations deal with diverse issue areas, including families, school absenteeism, the mediation of conflicts, and the transition from primary to secondary education.

Both disadvantaged and better-off communities feature in the following examples, which cover different ways in which communities function as partners.

> Construction works for improving the school environment were needed at *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* in order

to introduce small class teaching and invitational education (IE). Most of the works are designed or performed by the staff, parents, students and community members. Every effort has been made to create a learning environment with the collaborative participation of all these stakeholders in building a learning community in a literal sense, too. "IE Cell Group" and "Happy hour with parents" are held regularly to foster these relationships. The IE Cell Group holds meetings every month to help parents become familiar with the concepts and practice of invitational education; parents can also then discuss their children's education with the teachers.

At the *Consejo Nacional de Alianzas Educativas, Monterrey (Nuevo León, Mexico)*, the focus is on improving academic achievements and reducing drop-out rates at schools in impoverished suburbs by establishing contacts between students (age 12-15), parents, school staff and community experts from the social and private sectors. Characteristics include a centre for care of adolescents and their families built within the school and an empowerment programme to enable student mothers to generate sufficient income to prevent families from withdrawing their children.

The *Community Learning Campus (CLC), Olds High School (Alberta, Canada)*, is co-located on the Olds College campus and involves a special partnership among high school, post-secondary and community learning environments – which is known as the Community Learning Campus. Depending on the nature of the activity, students' classes take place in various buildings on the campus: for instance, students take their physical education classes in the Health and Wellness Centre, which is often used by community members at the same time. The Fine Arts and Multimedia Centre contains a theatre, a conference room and multipurpose areas for performing and visual arts, and also instructional spaces for music, drama and visual arts. Students have access to the university and college databases and books at the college library. Career and Technology Studies take place in the college's Agricultural Mechanical Building. The Olds High School can use high-end technology and multimedia labs in the e-learning Centre.

The learning environment extends its own professional and social capital by working through these partnerships. The local nature of certain of these partners helps to build visibility and connection in the wider community. But the relationships may work in both directions: contributing to the community and strengthening community links is not only a means to strengthening the learning community but also about revitalising the community itself.

In the *Yuille Park P-8 Community College (Victoria, Australia)*, the objective is to improve the social, economic and environmental circumstances of the community and to repair educational disadvantage by creating an environment that fosters positive interactions among generations and makes learning available to all community members. The school and broader community share facilities, including ICT-rich learning spaces. Teams of teachers use project based learning both for students and for lifelong learners in the community.

In short and in the terms of the OECD schooling scenarios (OECD, 2001), the learning environment becomes an example of "The school as core social centre".

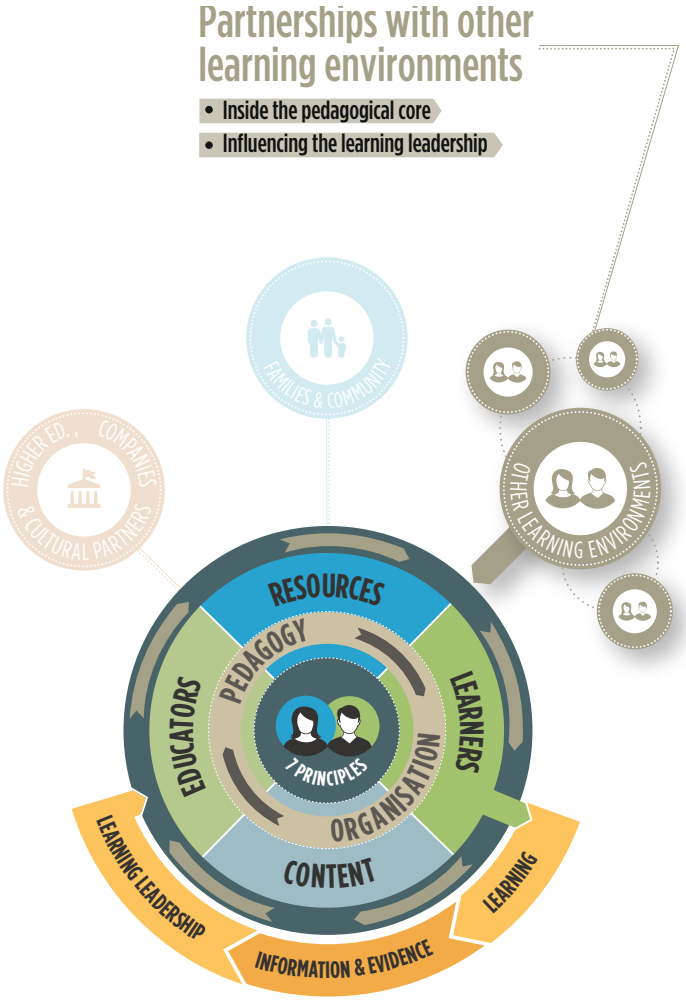
Partnerships creating networks of learning environments

Contemporary learning environments will not be sustained by working in isolation but instead need to be connected to diverse networks and professional communities, learning from others. A critical pathway to maintaining and building the dynamism and strength of the learning environment is extending its boundaries to other learning environments, which thereby gain in reciprocal fashion. Some of these relationships will depend on technology to collaborate with others at a distance while others will rely on more direct forms of face-to-face dialogue and action. There needs to be active communities of practice and networking sometimes involving certain players within the learning environment such as groups of teachers. Partnerships with other learning environments may healthily extend throughout all the environment's different activities and functions.

The range of such networking relationships is well illustrated by *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China):*

> By joining the Small Class Teaching Leadership Project organised by the Centre for Development and Research in Small Class Teaching in the Hong Kong Institute of Education, a learning circle of schools provides the teachers with opportunities to

Figure 6.3. **Networking with other learning environments as partners**



take part in lesson observation, mutual sharing and support with teachers from other 9 leadership schools. The school has learning partners in different places, as illustrated by the following activities held in the Distance Learning Classroom in September and October 2009:

Table 6.1. **Learning partners at the Distance Learning Classroom (Hong Kong, China)**

Activity (Subjects)	Partners
Hong Kong – Beijing Cross-school Teaching Lesson (English)	Feng Shi Fu Xiao (primary school) from Beijing, China
Cross-school Lesson Planning (English)	Feng Shi Fu Xiao (primary school) from Beijing, China
Arts Performance (Visual Arts)	4 local primary schools under Lo Sin Tong Benevolent Society from Hong Kong
Celebration Ceremony of The National Day of the People's Republic of China (Civic Education)	Primary schools from ZheJiang, Guangzhou and Hong Kong
Exchange Programme Meeting	Shi Jiang Primary School from FoShan, China
School Visit and Cross-school Lesson Observation (All Subjects)	Shi Jiang Primary School from FoShan, China
The History of Lo Sin Tong Benevolent Society (School Education)	Lo Sin Tong Benevolent Society from Hong Kong

Source: OECD (2012) Inventory case study "Lok Sin Tong Leung Wong Wai Fong Memorial School", www.oecd.org/edu/ceri/49930297.pdf (accessed 1 July2013).

The different purposes of partnering and networking with others are illustrated by the following extracts. Sometimes it is about professional learning and development.

> The aim of the programme *Obiettivo: comprensione (Target: understanding), Ticino, Switzerland)* is to create local groups of teachers working on the basis of the same methodology and sharing between themselves their experiences through the participation to a co-operative network, under the supervision of an external scientific advisor. The philosophy of the project is to start small and local, with some motivated teachers, produce and share some results in a collaborative way, and progressively involve other colleagues in the use and mastering of the methodology.

> According to teachers in *Dobbantó (Springboard) (Hungary),* the most useful source of support is the practice of regional meetings, where teachers and managers of schools in the programme met with the teams of 4 or 5 other schools every 6 months. Each of these events was organised by a school, and the schedule was set by the participants, with ample support from the programme management, e.g. providing experts requested by the schools. Regional meetings proved to be popular opportunities for a direct exchange of experiences and learning from each other; this was the form of support most appreciated by teachers.

Sometimes educational partnership goes further to encompass shared practice, albeit still with an important professional development dimension.

> Much of the work in the *Community of Learners Network (British Columbia, Canada)* was sparked by involvement in a provincial organisation that promotes collaborative inquiry called the Network of Performance Based Schools (now Networks of Inquiry and Innovation). The "Network" instigated and facilitated a

process through which teams of educators would inquire into an aspect of their practice and showcase their results to other educators within the organisation. The approaches used by these teachers are expanding to other classrooms: there are approximately 15 classrooms in the region that are fully integrating the core approaches, as well as several who are in developmental or partial stages of adoption.

Networking does not necessarily mean joining with others in the same system as in the examples just given. Increasingly – and greatly facilitated by the possibilities opened by powerful communication technologies – the networking takes place across system and national boundaries. This may be to focus on issues that are international in nature, e.g. language exchange, fostering intercultural awareness and understanding, or comparing perspectives in citizenship education. Or, it may be to widen the reach of students, teachers, contents and pedagogies across all curriculum areas by sharing learning and teaching with others in other systems.

The *ImPULS-Schule (Thuringia, Germany)* has school partnerships with a Dutch and with a French school. Other partners are, for example, in the Swedish network (network of Thuringian and Swedish all-day schools) and in the national network of schools following a reform pedagogy "Blick über den Zaun" (view over the fence). Other partners are the Ability Verein (an association for more generation houses), Berufsstart Plus (a project about transition into vocational training), the Bildungswerk Erfurt, and the State Development Corporation of Thuringia.

A key factor in the development of *Europäische Volksschule Dr. Leopold Zechner (Austria)* has been the regular participation in international projects like Comenius. "We have always been involved in EU Projects", a teacher pointed out.

The *Enrichment Programmes, Rodica Primary School (Slovenia)* are only part of its distinctive features: the school has also been engaged itself in many international projects:

- Comenius school partnerships: The central theme is children's rights, and there is co-operation with schools from Poland, Greece and Turkey.
- Comenius Regio: co-operation with other institutions from Domžale and other partners from Lodža in Poland on using literature and creative writing to change emotional, behavioural, cognitive, and social life.
- E-Twinning: co-operation with European partner schools through the internet classroom. The exchange of data and chatting takes place via different communication tools as for example e-chatrooms, e-mail, forums. Another e-Twinning connection was established with a Polish partner school in the Comenius School Partnerships.
- ACES (Academy of Central European Schools): within the "Keep trying..." project, which is focused on conflict resolution, it is connected with schools from Croatia and from Bosnia and Herzegovina.
- Young in action: debate clubs of four countries are participating in the international debating competition which is done in English.

Seen from the vantage point of the individual learning environment, these networks widen substantially their intellectual and cultural capital as part of building the learning community. From the system viewpoint, such networks function in a more diffuse way as the other members of the network are in other systems.

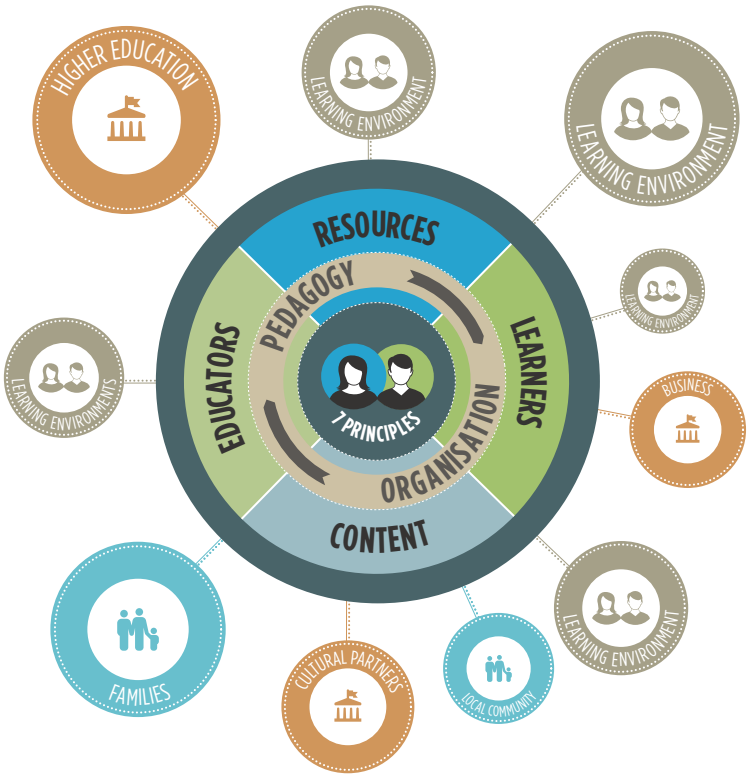
Partnering to extend learning environment boundaries outwards – developing the "meso" level

We have stressed the extent to which partnerships which look "external" from an institutional vantage point, in fact enter right inside the learning environment – whether into the elements of the "pedagogical core", its organisational dynamics, or into its leadership, professional learning, evaluation and feedback processes (Figures 6.1-6.3). At the same time, such partnerships create clusters and networks and extend environment boundaries and make them more permeable. Hence, partnerships are not only about enriching learning environments within but extending their boundaries outwards, creating networks in the process. Both the number of the partnership connections and their strength and quality are relevant. Viewed from a more systemic vantage point, this is about growing the "meso" level via diverse networking and partnership arrangements. We would argue that this is critical for growing the prevalence of innovative learning environments and hence creating system change.

Figure 6.4 seeks to capture this connectivity, with partners joining with the learning environment and over time creating something very different from the neatly bounded institutional image of the individual school. The connections and partnerships with other learning environments are different in kind in that they also have learning as their central purpose.

Figure 6.4, drawn around a single learning environment as the hub, still does not well represent the "meso" level of more widespread networking when this becomes a systemic feature rather than more isolated practice. Each of those other learning environments can equally be seen as hubs, and so on. A key feature of learning systems is thus the density and quality of hub formation, and the quality of their activity.

Figure 6.4. **Extending learning environments outwards through different network partners**



"Beacons" in networks

Sometimes, the partnerships with other learning environments is not so much through communities of practice where each engages on an equal footing, but rather the learning environment in question acts as a "beacon" of expertise with others. It is not just a hub as all networked learning environments are, but enjoys special status through its specific expertise that it offers to its satellites. Given that the case study learning environments have been selected because they are innovative and exemplary, it is not surprising to find that they often play such a role and are widely visited and become learning leaders. They may be the focal point of networks with a clear professional development mission.

> Professional learning led by the *Australian Science and Mathematics School (South Australia, Australia)*, with some support from Flinders University, is a significant part of its role. Thousands of South Australian and other Australian teachers have visited each year for single or multiple-day professional learning sessions, on a range of topics, including: meta-cognition, pedagogical practices to engage students, e-portfolios, skilling teachers in emerging sciences of biotechnology and nanotechnology, inter-disciplinary curriculum, and leading-edge science enquiry and educational practice. Over 800 educators have worked alongside ASMS staff over two or three days in the Professional Practice programme. And, the ASMS has also worked with teachers from small rural primary and secondary schools to support professional learning and inquiry-based approaches.
>
> The *Institut Beatenberg (Bern, Switzerland)* has influenced school development in the German-speaking countries. There are approximately 25 visitor groups each year, two-thirds from Germany, and many talks and multi-day seminars given elsewhere mostly in Germany and Austria. The Learning Factory was created to promote this process of school development, in co-operation with the Transfer Centre for Neuroscience and Learning at the University of Ulm. It offers a one-and-a-half year, extra-occupational training as learning coach in Ulm, shorter coaching seminars in Switzerland, as well as further programmes to promote school development. Several schools in Germany and in the canton of Zurich have adopted elements of the Beatenberg learning environment.
>
> The *Instituto Escuela Jacint Verdaguer (Spain)* is known as one of the most advanced schools in Catalonia and during the previous year, it was visited by 90 education professionals who wanted to learn about the way they work, ask questions, etc.
>
> The systematic, highly structured approach to transforming *Courtenay Gardens Primary School (Victoria, Australia)* writing practices has acted as a catalyst for a series of other changes to teaching and learning. The school now shares this knowledge with other schools through a presentation entitled "Success Breeds Success". The teachers actively contribute to the professional learning of staff at other schools including via the Cranbourne Network of Schools, which mentors 20 schools through a similar writing approach.
>
> The innovations at *Mordialloc College (Victoria, Australia)* have influenced teaching practices elsewhere through a full day of professional learning organised once per month. This is charged for in order to minimise "educational tourism" by giving visitors from around Australia and overseas a complete understanding of the philosophy and pedagogy of the Learning Centre and Enquiry Zone.

Concluding summary

Contemporary learning environments need to be connected to diverse partners, networks and professional communities. Their organisational base and community support are thereby extended, their social and intellectual capitals are replenished, and they are learning from others and creating synergies that are impossible in isolation. Partnerships both reach right inside the learning environment, on the one hand, and they extend boundaries outwards, on the other.

When learning environments partner with higher education, there can be clear advantages in drawing on the expertise and capacity so offered but the benefits can work both ways. The relationships feed into the learning environment through different ports of entry: through the leadership and learning cycle in terms of informing leadership, strengthening teacher learning, and analysing learning evidence. It may also feed directly into the "pedagogical core", by extending content, for instance, or the teacher profile, or learning resources.

Similarly, the cultural and social partnerships entered into can be very useful in extending the boundaries of the learning environment beyond formal school provision, and in offering access to cultural materials, experiences and different teaching expertise. "Corporate" partners include local or larger businesses, and also different foundations. Some of the partnerships may be the conventional community links of businesses helping through a funding or sponsorship role, but they may be much more about the learning that takes place instead.

This chapter has brought into relief some of the ways in which parents and families are made part of the learning community and thereby strengthen it. This is partly longstanding good practice of any effective school: of strengthening support from families, for instance, in support of their children's learning. Some learning environments go much further by bringing family resources right into the core of teaching and learning and in integrating themselves into the networks of community organisations and resources. Sometimes, this means to fully engage with otherwise indifferent, even hostile, families and communities. This is not just about garnering support for school activities but of reshaping the pedagogical core via community teachers, resources and content, and project-based pedagogies that depend on community engagement.

Networking with other learning environments is critical, and mutually beneficial. Some depend on technology to collaborate with others at a distance while others will rely on more direct forms of face-to-face dialogue and action to create active communities of practice and networking. The nature of the cases selected for this study means that they may enter into some networks not as equals but as exemplary sources of professional learning for others.

With our focus in this report on particular cases, it is not surprising that we have looked at partnerships and networks with those cases as the hubs in the middle. Viewed from a more systemic vantage point, however, they are all contributing to growing the "meso" level via diverse networking and partnership arrangements. This is critical for the larger ambition of growing the prevalence of innovative learning environments.

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Chapter 7

The Nature of Learning principles revisited

The innovative cases amply confirm what research tells us makes for effective, powerful learning and what in practice the learning principles actually mean. This chapter shows how the Innovative Learning Environments (ILE) case studies: 1) *make learning central, encourage engagement, where learners come to understand themselves as learners;* 2) *ensure that learning is social and often collaborative;* 3) *are highly attuned to learners' motivations and the importance of emotions;* 4) *are acutely sensitive to individual differences including in prior knowledge;* 5) *are demanding for each learner but without excessive overload;* 6) *use assessments consistent with its aims, with emphasis on formative feedback; and* 7) *promote horizontal connectedness across activities and subjects, in and out of school.*

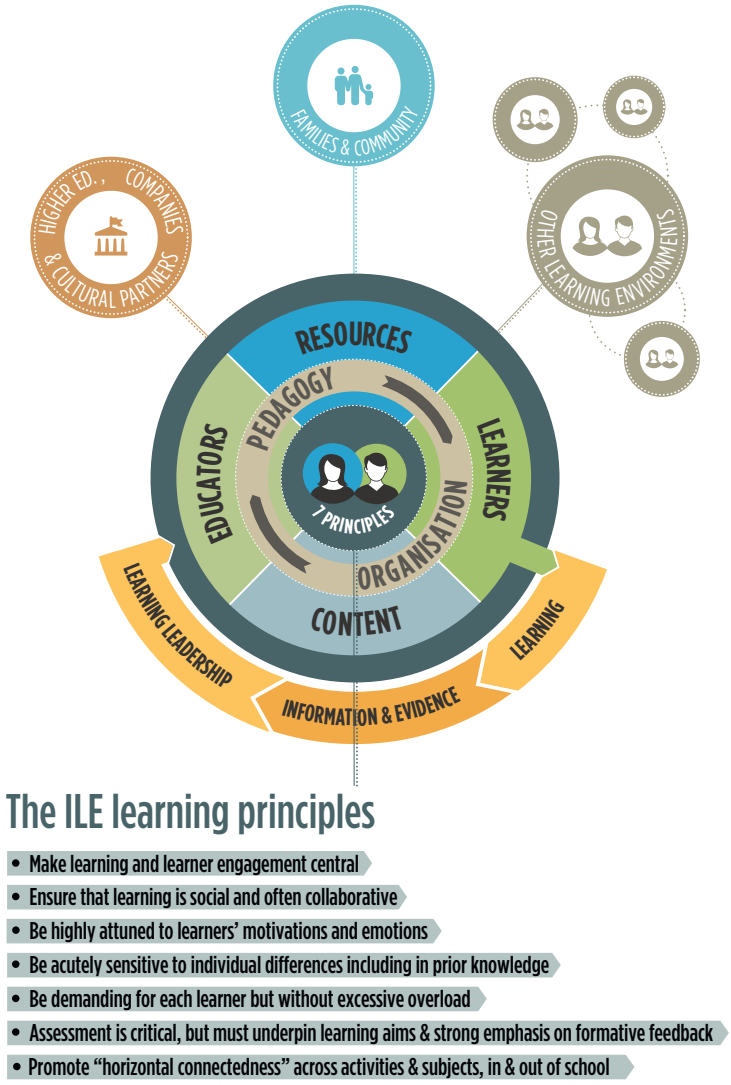
Naturally, they are not realised everywhere in the same way and need to be interpreted in relation to their local context. Many of the practices address several principles at the same time.

Introduction

With the conviction that learning research can and should be used to inform educational policy and practice, the "Innovative Learning Environments" project produced *The Nature of Learning: Using Research to Inspire Practice* (2010). Leading educational researchers and learning specialists were invited to review relevant research findings on how people learn and to present these findings in an understandable and accessible way. It concludes with a synthesis of the main findings, drawing all into seven key transversal "principles" which can guide the design of learning environments for the 21st century.

The Nature of Learning is – by the nature of the enterprise – theoretical and relatively abstract. This chapter goes one step further by examining what the principles mean for learning organisations, students and teachers in practice. The principles seek to sum up the rich vein of knowledge provided in the individual chapters in *The Nature of Learning* in a holistic and accessible way; the cases collected in this project provide a rich database for bringing these principles to life.

Figure 7.1. **The ILE learning principles should be at the core of the learning environment**



There is another purpose to the chapter. The principles represent a framework of criteria to test whether any particular learning environment is being developed in accordance with the lessons of learning research. The case study learning environments, in the manifold ways described in this chapter, fit these criteria very well. As the principles are focused deliberately on the nature of learning, they become manifest in the pedagogical core i.e. in the ways that learners, teachers, content and resources are brought together in different teaching and learning activities using a variety of organisational, pedagogical and evaluative approaches. However, the ways in which those principles get shaped and influenced are equally through the processes of learning leadership, design and formative redesign and by extending boundaries to wider partnerships. Hence, *The Nature of Learning* principles are at once a manifestation and result of the practices described in this volume and a framework of evaluation.

Learner centredness

The learning environment recognises the learners as its core participants, encourages their active engagement, and develops in them an understanding of their own activity as learners

This principle reflects the understanding that knowledge is not just passively absorbed but actively constructed by the learner. A learning environment must actively engage all students in the learning process and make them "self-regulated learners", meaning that they develop an understanding of their own activity as learners. They should be able to monitor, evaluate and optimise their own learning and regulate their emotions and motivations accordingly.

Learning a central organisational priority

In the first place, this principle is met when "learner centredness" defines organisational priorities.

> At *Yuille Park P-8 Community College (Victoria, Australia)*, educators, parents and other adult community members work together to achieve generational change for their children. Every aspect of the physical buildings, school operations and curriculum has been carefully designed to enable the motto, "Living to learn, learning to live", to become a reality for each student at the school.
>
> The constitution of *Colegio Karol Cardenal de Cracovia (Chile)* started in 1997 and establishes school government for the boys and girls. Article 1 of the Constitution states: "Children are the main actors of the teaching and learning process".
>
> The main focus of *Jenaplan-Schule, Jena (Thuringia, Germany)* is that the students learn how to learn – this within the framework of mastering learning content. The underlying idea is that everyone involved should be responsible for successful learning – the learners are to be activated through direct feed-back in ways that contribute to formative learning.
>
> When the administration has to select a new teacher, one very important aspect to consider is the degree of commitment: "If a teacher says that it is not his fault that students don't learn, we know he is not good for us. We have the main

responsibility for the learning of children inside the classroom." (Head of Studies, *Instituto Agrícola Pascual Baburizza, Chile*)

The assistant principal summarises the approach of *Courtenay Gardens Primary School (Victoria, Australia)* to mean that "nothing happens here accidentally. Everything is planned because at the end of the day, it is all about improving student learning".

One teacher's comment reflects the overall benefits of the innovative approaches and personalisation of the *Australian Science and Mathematics School (South Australia, Australia)*:

> The emphasis is on the learning rather than the teaching. ... Our learning theory is focused on inquiry ... We have to change the way that we work ... personalisation: I think that that is really fundamental to what we try to do here ... We try to look at the curriculum from the learner point of view and support them. There's a whole lot of flexible ways of working. ... We work in small groups, one to one, classes work together ... flexible ways of working. ... Pre-programmed materials can be put on the portal.

It is a goal for *Valby Oppvenkstsenter* (*Norway)* that the pupils have the identity of learners. The ideal is the Learning Sun, which is surrounded by and contains emotions (følelse), faith (tro), knowledge (kunnskap), and will (vilje).

Figure 7.2. **Valby Oppvenkstsenter philosophy – the "Learning Sun"**

Source: OECD (2012). Inventory case study "Valby early development centre and primary school Larvik – an active learning approach", www.oecd.org/edu/ceri/49945416.pdf (accessed 11 July 2013).

The Valby objectives can be summarised in six key points:

1. The pedagogical basis should be adaptability – not teaching.
2. The potential of the child should be the basis for teaching.
3. Children should learn from children.
4. Teachers should work as a team.
5. Diversity should be exploited as a resource.
6. Systematic collective reflection should form the basis for shared practice.

The metaphors and language in use can be deliberately chosen to underline and reinforce organisational priorities – in this case, that learning is at the core of the organisation's business and objectives.

The metaphors in use by *NETschool (Victoria, Australia)* staff imply an alternative approach to teaching, learning and assessment, one in which the learner is central to the educational practices.

In order to be able to name the many new structures, processes and tools which have learning itself at the core, the *Institut Beatenberg (Bern, Switzerland)* has created a large number of new terms or uses existing terms with a particular meaning. Several of these terms have in whole or in part been taken over from English – sometimes resulting in pseudo-English terms – in order to contribute to an atmosphere that differs from the association with traditional schools.

Table 7.1. **Glossary of the specific Institut Beatenberg terminology**

Original term	English translation
Agenda	*Agenda*
Aktiv	*Aktiv*
Baumarkt	building supplies store
Checkliste	checklist
Sammelportfolio	collection portfolio
Feedbackgespräch	end-of-term interview
Go4it	*Go4it*
Wochenschwerpunkt	key topic of the week
Layout	*Layout*
Lerncoach	learning coach
Fachcoach	learning coaches who are in charge of a subject setting
Lernportfolio	learning portfolio
Lernjob	learning task
Lernteam	learning team
Standortgespräch	parent-and-pupil interview
Bezugscoach	personal coach
Selbstkompetenz	personal skills
Werkschau	presentation of the pupils' work
Präsentationsportfolio	presentation portfolio
Lernnachweis	proof of learning
Kompetenzkompass	skills compass
Kompetenzraster	skills matrix
Smarty	*Smarty*
Fachsetting	subject setting
Trimesterbeurteilung	term report
Unit	*Unit*
Bilanzgespräch	weekly appraisal interview

Source: OECD (2012) Inventory case study "The Beatenberg Institute", www.oecd.org/edu/ceri/49930760.pdf (accessed 1 July2013).

Putting learning at the centre may *inter alia* mean to aim consciously to reduce the gap between the teacher and the learner:

> At *Makor Chaim (Life source) (Israel)*, and following the Torah principle "Do not teach what you know, teach what you wish to learn", teachers study subjects together with their students, eliminating the dichotomy between the teacher who knows and the student who does not know, "turning both of them into those who do not know and therefore wish to study together".

Learner engagement

The second key aspect of the "learning centredness" principle is *engagement*. If the learners are not engaged, their possibilities for learning are substantially reduced. This is about both individual engagement and the equity objective of engaging all learners in the environment. Earlier chapters have already illustrated how enhanced engagement underpins the adoption of such approaches as learning with technology and working with projects, when these are well done. For some of the case study learning environments, indeed, combatting disengagement has been their essential purpose:

> *NETschool (Victoria, Australia)* was founded in order to re-engage young people (aged 15-20) in work or study. It offers a highly innovative environment designed to provide positive learning experiences for "at risk" students.
>
> Ten years ago, before the teaching team committed itself to the transformation of *CEIP Andalucía, Seville* (*Spain)* some of the defining characteristics were lack of student motivation and interest, distrust in teachers, lack of school habits and of expectations for their future, high absenteeism, and poor academic results.

In other cases, enhancing engagement is a high priority among others, and an important indication of success.

> The goal of *Mevo'ot HaNegev (Israel)*, which was developed gradually, has been to increase the *engagement of both teachers and learners in educational performance* as they shift from dealing with teaching to focussing on learning in addressing cognitive learning (knowledge), meta-cognitive learning (understanding how to learn and how we acquire information), and social and emotional development (the entire area of personal and interpersonal communication). Ever since shifting to this model of learning and assessment, students have been perceived as more active and independent: students have to solve problems and direct their own learning; they are curious and enthusiastic learners who are involved and having fun. "It interests them. They do things with care and passion" (teacher).
>
> The *Centre for Studies on Design at Monterrey (CEDIM) (Nuevo León, Mexico),* engages the students participating in it by interchanging ideas, expectations, goals and objectives; it focuses on project achievement which satisfies the needs and interests of the enterprises or institutions asking for it but also those of students who make those projects theirs. Both the students and executives expressed how important is the motivation generated from these projects.
>
> The students at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* are participating in a national student engagement study called *Tell Them From Me*? Teachers and administrators are particularly interested in increasing student intellectual engagement.

The whole idea with the innovation at *Breidablikk School (Norway)* was based on the focus on motivation, as written up by one of the teachers in an article on Interest-based choices for increased motivation: "The basic idea was that the pupils would learn more if they were allowed to meet the curriculum via their own interest fields. ... At this age, the pupils are in a formative phase, so motivation for the school work may as well be about access to challenges for building attractive identities in their everyday school practice." In that perspective, the different tracks offered will give the pupils opportunities to develop their different pupil styles to include success at school.

The learners at the *Saturna Ecological Education Centre* (*British Columbia, Canada)* said that all their assessments were about how each of them is improving, that it is personalised because it's "from where you are to where you're going, and I love that, it's very motivating".

At *Colegio Karol Cardenal de Cracovia (Chile)*, the aim is to provide a different type of education to students and this is reflected in the different workshops and activities. For example, they have a workshop on circus-theatre, where children are taught to develop self-consciousness, they have games, juggling lessons, karate workshop, music workshop and the most important workshop is school government.

Skilled at self-regulation

The principle's third element is that the learning environment "develops in them an understanding of their own activity as learners". The learners become able to undertake the planning, organising and monitoring of their own learning; they are encouraged to develop their own learning goals and learn how to evaluate what they have already accomplished and what still needs to be done.

In the *Lobdeburgschule (Thuringia, Germany)*, an approach was developed to gradually build the self-regulation of students. From the 5th grade, learners are systematically trained in a range of methodological competencies, taking on more complex competencies as they progress. For example, a 5th grade learner is trained in the "5-step reading method", and a later learner is trained in higher-order competencies like "interpreting texts" (grade 8) and "arguing" (grade 9). Lobdeburg is characterised through efforts to strengthen personal responsibility and independence with acceptance and support of each person corresponding to their individuality.

The *Institut Beatenberg (Bern, Switzerland)* relies on self-regulation to a degree not usually seen in primary and secondary education. The learners assume complete responsibility for their own learning, aided by an extensive range of cognitive and meta-cognitive tools and regular interviews with their personal coach. The importance assigned to "learning to learn" is demonstrated in that a specific skills matrix has been created for learning skills. Independence and assuming responsibility for one's own learning apply not only to the accomplishment of a single learning task but are relevant to the learners' inclusion in the planning of their education (parent-and-pupil interview) and in the definition of the goals for the term, i.e. when they choose from the range of offers in the optional settings. The concept of self-directed learning becomes most visible in the "learning team".

The *Australian Science and Mathematics School (South Australia, Australia)* educational philosophy is focused on personalisation and independent learning, as

evident in the published learner expectations such as: understanding themselves as learners and sharing learning with others; being autonomous and self-directing; valuing the beliefs of others and working in groups and independently; using their own experiences to construct and add meaning; identifying and critically evaluating resources and creating meaningful learning products for real world situations and audiences. A range of strategies is used to personalise the curriculum and to support self-directed learning such as the Personal Learning Plan, opportunities for negotiation within topics, assessment choices and materials being available on the online portal.

Each morning at *ImPULS-Schule (Thuringia, Germany),* the checklists are discussed in a chair circle and afterwards the pupils choose their topics according to their own interests and needs. The self-regulation process is monitored by checklists and self-tests. Using individual learning diaries and supported by teachers, students plan their daily and weekly learning aims at the beginning of each day for about 15 minutes. As part of this routine, they also reflect about what they have learned the day before. At the end of each week, the whole learning progress of the week is reflected and the next week is planned. Each time, at the end of the 80-minute units, the pupils reflect and discuss the completed topics, the used methods, and their individual success sitting with other pupils in chair circles.

At *Mevo'ot HaNegev (Israel)*, meta-cognitive learning is a priority, in order to increase learners' awareness of the values that lie behind their actions as well as of the way they learn, and to increase their engagement and responsibility for learning, all this using a project-based learning strategy.

Observed classes in *Dobbantó (Springboard) (Hungary)* differ from regular classes mostly in that students are much more active. Lectures by teachers are very rare; students work individually or in small groups very often. As traditional textbooks are not used, the study material is basically selected by the students (following the teacher's detailed instructions).

The case study learning environments that have most explicitly the objective of developing regulation in learners do not under-estimate how demanding this can be for novices who are not used to it.

According to the learning coaches at the *Institut Beatenberg (Bern, Switzerland)*, the pupils have only little experience with this kind of learning when they enter. The learning teams offer excellent conditions for the development of the learning skills due to the intensive support provided by several learning coaches and the clear structuring of each week with five learning tasks, the weekly appraisal interview and the weekly presentation of the pupils' work.

The learner groups at *Jenaplan-Schule (Thuringia, Germany)* are structured into three-year age groups (the sub-group, middle-group and upper-group). The sub-group is introduced to the weekly plan work and later on to the project work. The acquisition of self-regulation strategies for the individual learning process is the main focus.

Pupils take responsibility for their own learning process at the *ImPULS-Schule (Thuringia, Germany)*. A problem of the co-operative learning environments is that the usage is hard to learn and there is a lot of prearrangement. Therefore, the pupils get specific learning strategy trainings and the learning materials for each topic are well prepared.

The social nature of learning

The learning environment is founded on the social nature of learning and actively encourages well-organised co-operative learning.

"Effective learning is not purely a solo activity but essentially a distributed one" (Dumont et al., 2010: 52). However valuable that self-study and personal discovery clearly are, learning depends on interacting with others. There are robust measured effects of co-operative forms of learning when it is done properly. The ability to co-operate and learn together should be fostered as a 21st century competence, quite apart from its demonstrated impact on measured learning outcomes. Chapter 3 referred to how learners may often teach their peers, and Chapter 4 illustrated how skilled the learning environments can be in using different ways of grouping the learners to enhance their learning, including mixed-aged groupings. All of this is about optimising the social nature of learning, reinforced by the examples presented below.

Recognising the social nature of learning

For certain of the learning environments, the social nature of learning is a central defining feature of their approach and organisational culture.

> Central to the philosophy of the *Community of Learners Network (British Columbia, Canada)* is the motto "We are all learners; we are all teachers". Talk – in partners, in circle meetings, in peer conferencing sessions and elbow to elbow coaching sessions – is essential to the building of community and the construction of knowledge. The fact that the learning of every learner is the responsibility of the community creates commitment to collaborative learning.
>
> In the group interview, the seventh to ninth graders in *One-room School, Gesamtschule Lindental (Switzerland)* name the co-operation among the pupils as the most characteristic element of their one-room school.
>
> The *REOSCH (Bern, Switzerland)* diploma was developed in order to lend more weight to the development of personal and social skills. There are three consecutive levels the young people can reach, moving from personal skills to social skills and explicitly rewarding shown capacity to work with others:
>
> - *Diploma level 1*: The pupil strives to improve his or her perception, concentration, endurance, imagination, health awareness and ability to work under pressure, and these efforts have already met with success.
> - *Diploma level 2*: The pupil is able to adjust to a group and is aware of the importance of this ability. The pupil keeps working on his or her ability to perceive others, to respond positively to criticism, to cope with emotions, and is willing to overcome resistances.
> - *Diploma level 3:* The pupil considers himself or herself as an active participant in the group. (S)he is able to inspire and guide the group and has negotiating skills. Active participation in the two-week trekking trip is a prerequisite for achievement of the third diploma (at the end of grade 9 or 10).
>
> As the majority of children and young people are isolated from peers even within the hospital during their stay, the access and availability of ICT to facilitate social

> connection and limit social isolation is hugely important for the on-going healthy development and well-being of these children. Strong connections between the *Royal Children's Hospital (Australia)* and external partners have been established to investigate, amongst other things, the use of different technologies for keeping young people engaged with learning and connected with their peers and school communities while in hospital.

Sometimes, the social nature of learning is so explicitly recognised that occasions are scheduled to raise and discuss interpersonal issues.

> At the *One-room School, Gesamtschule Lindental (Switzerland)*, a weekly class meeting is held every Friday where learners reconcile their differences, agree on social rules within the class, and express thanks to each other. In accordance with deliberately fostering social skills and competencies, oftentimes, students are also given corresponding feedback.
>
> Students at the *Jenaplan-Schule (Thuringia, Germany)* meet every Monday morning to discuss intergroup problems and conflicts and talk about the social climate of their learning group.
>
> The first and last weeks of the academic year in the *Dobbantó (Springboard) (Hungary)* do not follow the normal template. The first week is devoted to getting to know each other and making plans, and the academic year is closed by a week of feedback and looking into the future.

Co-operative learning

As discussed by Slavin in his contribution to *The Nature of Learning* (2010), co-operative approaches still remain on the margins of much school activity, despite very longstanding understanding of its benefits and an almost equally longstanding accumulation of evidence to support its value. In too many systems, the culture of working by oneself remains deeply entrenched. He also argues on the basis of the evidence that group-work needs to be much more thoughtful and designed to enable learning than simply letting young people talk and share tasks. The case study learning environments illustrate well these points.

> *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* has restructured all classes in primary 1-6, divided students into small groups normally with 3 to 4 group mates. Each group is made up of some more able and some less able students. The heterogeneity of the groups enhances co-operative learning in which students work together to maximise their own and each other's learning.
>
> In the *Community of Learners Network (British Columbia, Canada)* circle discussions are referred to as Literature Circles, Information Circles and Numeracy Circles, and generally comprise 4-8 students. Students from the various groups gather to share the information they have acquired, with a teacher facilitating the sharing of information, prompting in-depth thinking, offering feedback, and highlighting key elements of the topic under discussion.
>
> At the *Community Learning Campus (CLC), Olds High School (Alberta, Canada)*, different types of groupings are used for different assignments:
>
>> Sometimes I'm in a table grouping of four students and sometimes I am in a grouping of just two students and sometimes I choose to work by myself. It's the best, because I can talk with the other students and we

> work our way through the project. It really makes me think that two minds are much better than just one because sometimes I just don't know this and your partners know a better way to do it and you end up learning from them. (Student)
>
> We brought all the English students together and gave them a four- or five-page detailed editing sheet of the criteria they were to work with. They had to take someone else's essay before we had our look at it. They went through a peer assessment process with a classmate's essay, providing specific, detailed, helpful feedback to help them improve their essay. They were learning from the mistakes that someone else made, but they were also finding out ways to improve their own writing and thinking. After this, the students worked on their own essays again. They got formative assessment back from their peers and they got to redo it, bring it back to us and then of course we graded it, but then we also provided the students with more feedback. (Two teachers)

Project work in *Mevo'ot HaNegev (Israel)* reinforces collaboration and the learners reported many benefits: the material is more accessible, deliberations with friends make the discussions more interesting, each one can help the other and the personal work load is smaller. The advantage is most significant in complex and large assignments where, as stated by one learner: "there is a lot to write, lots of work to find materials, so it's easier when two persons do it and you are not left with the entire load". Applying understanding reinforces additional skills as the learners are required to present their products in a variety of ways, including posters; presentations in front of parents, students, teachers and experts; and other aids.

In the *Europaschule Linz (Austria)* the lessons are designed to encourage and allow pupils to assume a high level of responsibility both for their own and for their classmates' learning processes. For example, in a class divided into two groups there was a deliberate information gap, which the pupils then had to bridge by explaining the subject matter to each other. They took this task seriously and really tried to make each other understand. Learning by teaching means not only taking on the role of teacher, but also assuming the latter's responsibility.

Once external partners have designated which of the proposed projects are to be developed by a student group, the steps followed by *CEDIM (Nuevo León, Mexico),* are:

- *Presentation of project to be developed:* once the case is presented, students must have clear specifications of the project, of the problem, of project characteristics and of its purpose itself.
- *Problem definition:* students must have defined the problem to be resolved, and in this way, to become an agreed 4-month project.
- *Brainstorm:* once the problem is identified, the group is organised in teams so as to achieve agreements about what it is needed to know so as to find its solution and to develop the project.
- *Classification of ideas:* after the brainstorm, such ideas must be classified and prioritised to define the fundamental ideas to address the problem.

- *Formulation of learning objectives:* students and the teacher together determine learning objectives, based on project characteristics.
- *Research:* research is used from different sources to make a comprehensive survey around the problem, extract key concepts and main ideas, and finally, to collected material; on the basis of all this students create an action plan.
- *Group organisation to develop the project:* students are organised to develop the project to an agreed schedule, guided by a teacher.
- *Presentation and results discussion:* students present their projects to the teachers and apply different types of evaluation from them: self-evaluation, evaluation and co-evaluation. Enterprises and public or private institutions attend presentations and evaluate them as well.

Often, these forms of co-operative learning are supported by communication technologies which provide helpful tools for student interactions, such as discussion boards, blogs, forums, chat-rooms and messaging.

> Activities in e-classrooms (chat rooms, forums, individual messages) enable good interaction among pupils and between pupils and teachers not only in the area of knowledge, but also in social, pedagogical, and psychological areas, which contribute in important ways to the development of whole personality. "What I like the most is simple use of e-classrooms, the opportunity to do tests, and communicate with the people who are in the e-classroom at the same time." (Student at *Internet Classroom, Kkofja Loka Primary School, Slovenia*)

> Such a virtual learning environment called Link is one of the main outcomes of *Liikkeelle! (On the Move!) (Finland)*, a forum for social networking among students, teachers, and various kinds of experts in which users can publish blogs, establish working or friendship groups, share files, pictures and movies, engage in discussions, and send messages to each other.

> An example of both authentic and collaborative learning within the *Royal Children's Hospital,(Australia)* is the "Trans-Tasman Project" where students from different age groups across the hospital worked together to gain an understanding of how the Christchurch (New Zealand) earthquake affected the young people there. Assisted by the teachers, they connected with a school in Christchurch, and created a blog to facilitate input, voice and decision-making about the project with the aim of raising funds through the development and selling of wrist bands. Students of diverse profiles and across different wards of the hospital combined to participate in this student-led, inquiry-based collaborative project. Hospital-wide communication between the young people occurred via various mechanisms including face-to-face meetings in the hospital, via the blog and using an iPad walkie-talkie application between hospital floors and wards.

As with the example of regulation discussed under the first principle, habits of co-operation do not always come naturally especially in educational cultures steeped in individual work directed by the teacher. The *Itinerant Pedagogical Advisor (API) (Conafe, Mexico)* in the following example finds he needs to work at overcoming this entrenched culture to get the students to collaborate.

> Working in a multilevel environment is usually an advantage for the advisor because collaboration amongst students is continuously taking place. In this particular school, Ramiro is focussing on boosting co-operation between classmates, because

> kids were under the impression that helping another student meant doing all the work for them instead of guiding them; he is working on making them comprehend that helping a classmate means explaining to them, providing them with hints that allow them to figure out their own conclusions. He is guiding the tutoring and reinforcing that students from the upper levels coach students from the lower ones. (Itinerant Pedagogical Advisor)

The examples confirm the value of co-operative learning and the need for this to be done in designed, deliberate ways: learning and working together is commonplace among the cases, and tends to be done consciously using a range of approaches to enhance the learning.

Responsiveness to motivations and emotions

The learning professionals within the learning environment are highly attuned to the learners' motivations and the key role of emotions in achievement.

The cognitive, emotional and motivational dimensions of learning are inextricably entwined (Boekaerts, 2010). Learning cannot – and should not – be understood as a purely cognitive activity: teachers need to be aware of and responsive to students' emotions and motivations in order for successful learning to happen. Research and everyday practice underscore how students are more motivated to work hard and engage in learning when the content is meaningful and interesting to them. They need to feel competent to do what is expected of them and learn better when they experience positive emotions. Learners need to become attuned to their own emotions and motivation if they are to become self-regulated learners.

By placing students at the centre of learning, their interests and needs are naturally recognised. Developing positive attitudes to learning may be built into the explicit aims of teaching and feedback or it may take the form of offering electives and extra-curricular activities that meet learner interests. The innovative learning environments make students feel confident about their skills and abilities by concentrating on qualities and resources of each student rather than inordinate focus on deficits and weaknesses.

Learners have feelings – recognising the importance of motivation and emotions

Recognition of the importance of emotions is in part to share an understanding throughout the learning environment of learners as whole people – replete with emotions and feelings – rather than more partial mechanical assumptions about learners and their learning.

> A central aim of the *Institut Beatenberg (Bern, Switzerland)* is to enable the pupils to experience a feeling of success, i.e. a sense of achievement. Success is made visible, it is an explicit topic in the weekly appraisal interviews and in the parent-and-pupil interview; the definition of learning goals are tailored to each individual pupil's capability and the regular provision of individual feedback seeks to ensure that each and every pupil meets with success. Each student can choose his or her "key topic of the week". This can be either a topic of personal interest to the student, or one aimed at filling a student's knowledge gap, or one relating to other parts of the current curriculum.

At the *Instituto Escuela Jacint Verdaguer (Spain)*, students can engage in several activities such in the fields of theatre, sports, music and art, with the aim to encourage them to express themselves and develop self-confidence.

Students are placed "at the centre of learning by finding out first what their passions, interests and needs are" as stated by the *Discovery 1 and Unlimited Paenga Tawhiti, Christchurch (New Zealand)*.

In *Miwon Elementary School (Korea),* story-telling, the singing of children's songs, acting in plays, and a musical produced in a foreign language all effectively raised the pride of the students and parents from both foreign and Korean families.

At the *Jenaplan-Schule (Thuringia, Germany)*, for instance, the act of celebration has even been institutionalised. Every Friday at noon, the week's learning results are celebrated with the whole school.

CENDI (Nuevo León, Mexico) is creating in children a conscious stage that progresses, extends and reinforces their collaborative learning through community involvement. This means to address doubts, concerns, and questions they have to differing degrees of their intellectual and physical development as part of the educational process. This creates a participative, warm and secure environment, while avoiding the fears, insecurity or boredom they often experience in a traditional education setting. They facilitate the creation of interest, empathy and support among the children, and develop and stabilise emotional intelligence.

Particular emotional needs may be linked to the age and maturity of the learners. This is referred to by a couple of the case study learning environments, and how they have responded to these particular needs.

Children who complete primary education around age 12 start the new cycle in learning environments whose organisation, teaching methodologies, etc. is unfamiliar to them. This requires a period of adaptation and some students end up losing their motivation. This does not occur in the *Instituto Escuela Jacint Verdaguer (Spain)* since having become an integrated school as the same teaching approach and methodology are used, the two principals and the teachers of both stages talk and work together, quite apart from the physical connection between the two buildings.

Adolescents account for 15% of all hospital admissions to the *Royal Children's Hospital Education Institute (Australia)*. A needs analysis and consultation identified the necessity to address the diverse educational and specific developmental needs of adolescents. This resulted in an evidence-based adolescent learning environment within the Royal Children's Hospital designed to support varied learning modes. As social and emotional interaction is particularly important during the adolescent years with identity, psycho-social development, and emotional maturation being critical factors at this age, a diverse learning space has been created including individual and group-discussion spaces, retreat areas, information centres, lounge and recreation spaces and storage spaces.

Bonds of attachment and trust

The learning communities and the teachers and tutors within them can become strong sources of attachment, hopefully in healthy ways so that learners are also able to develop autonomy and self-sufficiency rather than dependency.

The *Community of Learners Network (British Columbia, Canada)* encompasses many aspects of social and interpersonal development as educators seek to create a deep sense of attachment to the learning community through a focus on belonging, support, interdependence and respect for diversity. Students are immersed in an environment that offers a balance of structure and autonomy so that they experience a combination of safety and accountability as they take risks in their own learning.

At *Europäische Volksschule Dr. Leopold Zechner (Austria)*, students tend to establish strong bonds with their teachers. The teacher as an attachment figure is important in a world in which the children experience a wide range of uncertainties. As many of these students live at home immersed in another culture, possibly even speaking a different language, a strong "mothering figure" can enable them to feel at home in the mainstream culture.

The teachers have more time with students in *Dobbantó (Springboard) (Hungary)* each week, getting to know them better, and making it possible for students and teachers to form a bond based on trust. The work of the teacher team may be supported by other specialised staff (e.g. school psychologist, developmental teacher, special education teacher, pedagogical assistant, the person responsible for child protection, social educator, school social worker).

It is recognised in *Instituto Agrícola Pascual Baburizza (Chile)* that many of the learners arrive with emotional weaknesses such that the Institute has been able to adapt a special working method to create some certainty and suitable guidance and support. Each teacher is in charge of 10 students and uses a personalised tutoring method. There is a psychologist who acts as a counsellor, who teaches two workshops every week at 11th and 12th grade with other teachers running the same workshop with levels 9th and 10th. Tutors are teachers who accompany students and are closer to them – there are three of them in the school – though tutoring is a mission shared by all the teachers.

Sustaining motivation is a key issue for these students. The central feature of *NETschool (Victoria, Australia)* mentioned by all interviewees and highlighted in the evaluation is that of relationships based on trust. Said one teacher and mentor: "the relationship you form with these guys is very important ..., you need to be able to have communication with them. They need to be honest with you and you have to be honest with them. So that's very critical". Given the significance of relationships, the school focuses on the close, personal support of mentors with learners, particularly with young mothers, who are perceived as a highly motivated group.

Education of the emotions

Interesting practices are found in the project learning environments to help students become aware of their own emotions and motivations, as a prerequisite to becoming self-regulated learners. Often, though not exclusively, the learners are facing challenging circumstances or behaviours to begin with.

The project *Chiamale Emozioni (Call them emotions) (Ticino, Switzerland)* aims at increasing teachers' expertise in fostering students' socio-emotional competences. In one project activity, learners discover and identify their fundamental emotions – fear, sadness, anger, joy, surprise, disgust and contempt

– and become articulate about them. Particular games and strategies include: Anger Soup and Emotion's Puppet for self-awareness; Sweet Words Relay Race for social awareness; Traffic Light Inside Ourselves for self-control; You Are Special for relationship skills, and The Magic Wand for responsible decision-making.

At the *Zakladni skola Chrudim (Czech Republic)*, students attend a wide range of seminars on social-emotional development, aimed at building a well-functioning team with peers and teachers and for practicing communication and social skills. The focus of the seminars is on mutual knowledge of pupils and teachers, student confidence and knowledge of their individual differences, mutual respect, confidence and responsibility. There is also attention to effective verbal and non-verbal communication; activities include role-plays and relaxation techniques.

In his book, the principal (of *Colegio Karol Cardenal de Cracovia, Chile*) tells how Reiki helps students living domestic violence:

> The first sessions of Reiki, supported by relaxing exercises, aromatherapy and musical therapy, applied to the little boy, and produced important change. Little by little he was learning new techniques that allowed him to better manage his emotions and by doing this he started recognising Karol world as an oasis compared with what he was living at home. He started to love himself and to enjoy the fact of being loved, protected and respected as a child. (Navarrete, 2006: 153)

It is recognised in *Instituto Escuela Jacint Verdaguer (Spain)* that learners need to be able to express themselves by either acting, playing, doing exercise, listening to music, or expressing themselves artistically or creatively. Situations need to be created whereby learners develop self-confidence and self-esteem. One term per year, students do kinesiology activities for 90 minutes per week, and also yoga activities. The aim is to help students concentrate, relax and gain more self-control. From the age of 12, students learn to recognise and to become explicit about their emotions through games.

A key aim for all pupils at *Europaschule Linz (Austria)* is the development of a positive perception of the learning process that will in turn be transferred into a positive attitude to lifelong learning. In this light, considerable importance is given to teaching pupils how to tolerate frustration and deal with failure and disappointment.

At the end of each day, the pupils at *REOSCH (Bern, Switzerland)* take 10 to 15 minutes to reflect on how they felt while they were learning during that day. They should focus not on what they have learnt, but on their emotions while they were learning. They record their observations in a notebook called the "energy diary". Its purpose is to improve the sense of self. As a first step, they try to map their moods and the triggers for these moods. As a second step, they analyse what it takes to improve matters, and only as a third step do they consider concrete ways towards that improvement. It serves as a basis for the weekly coaching interview, i.e. it is only used in a confidential setting in which entries will never have negative consequences for the diarists. Together with the working journal, it provides the basis for planning the following week.

Sensitivity to individual differences

The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge.

The learning environment devises programmes that demand hard work and challenge from all without excessive overload.

Students differ in a myriad ways regarding their abilities, competencies, motivations and emotions as well as their linguistic, cultural and social background. A big challenge for all learning environments is to be sensitive to these individual differences and understand these diverse backgrounds and starting points that students bring with them. Teachers need to be able to adapt learning activities to these individual differences and preferences. This is particularly true for the differences that exist in the prior knowledge and learning that students bring with them into the learning situation. This closely relates to the next principle on assessment for learning since it is through sensitive assessment that learner strengths and weaknesses can be identified and through which such individual differences are brought into relief. On this basis, teachers can then challenge their students to just above their existing competence level without overloading them – avoiding that anyone is coasting but also that anyone is out of their depth – a prerequisite for successful learning in groups of learners.

Because of the close interaction of these two principles in practice – sensitivity to differences and pushing each learner just up to or beyond their limits – they are taken together for this discussion. This section will focus on some of the general approaches that underpin personalisation in the ILEs as well as some illustrative examples taken from the cases.

Individualised approaches

At the Quality Learning Center and Enquiry Zone in *Mordialloc College (Victoria, Australia)*, students in Grades 7 to 9 spend three-quarters of their school time in "Learning Centres": open and flexible spaces characterised by an individualised learning approach. One teacher described this environment in which students work on different tasks as follows:

> You can walk over and find one student who's working on maths problems, another student will be working on the computer and doing something about Power Point ... some other students will be building something with clay. ... They are not all doing the same thing. And they'll be sitting at the same table talking to each other about the same thing, doing different tasks.

Not all the students were comfortable in the traditional school and the alternative was seen to base the approach on an appeal to pupils' interests in order to improve their disciplinary as well as social development. This was the basis for a new practical pedagogical model at *Breidablikk School (Norway)*. It implied differentiation of how pupils should learn, but not what they should learn. They should all fulfil the objectives of the national curriculum.

Valby Oppvenkstsenter (Norway) aims to make both the children and the teachers grow and is able to summarise its approach as:

- Giving the children an identity as learners and immediate attention and positive feedback, based on actively understanding each child and her or his needs.
- Making the school a learning organisation by systematic and positive feedback to the teachers through a system that promotes assessment for learning, sharing competencies and teaching tools and development ("The Project Companion").
- A three-way conversation bringing together parents, kindergarten and the primary school twice a year, and a new three-way conversation for coherence between the primary and lower secondary schools. In those conversations, the main point is the child's identity as a learner, where knowledge, competencies, values and social skills are analysed around an image of a robust and learning child.

Europaschule Linz (Austria) uses a combination of student-initiated and traditional forms of learning. Open structures are used to foster self-determination and independence. Autonomous, self-determined learning and alternating social modes are seen as a basis for differentiation and individualisation: "[They] are indispensable requirements for the necessary differentiation and individual support of all children". The adoption of flexible roles for teachers and pupils and the use of team-based teaching support a more individual approach which embraces differences in, for instance, ability and learner types.

New learning content is introduced to small groups of pupils (between one and four), typically of only one grade at *One-room School, Gesamtschule Lindental (Switzerland)*. Thanks to the teachers' close relationship to the pupils resulting from years of coaching their learning, they know their individual strengths, weaknesses and knowledge gaps very well. Consequently, the teachers are able to assess which pupils from other grades can profit by joining the present small group, be it because they have to catch up on a topic or because they are advanced enough to relate to what the older pupils are currently dealing with.

At *Dobbantó (Springboard) (Hungary),* the central elements are individual development, differentiation, the central role of assessment supporting development, and giving students the opportunity to take individual responsibilities. Co-operation, learning together and learning from each other are encouraged, and co-operative methods, projects and formative assessment are used.

Because of the particular situation in the hospital with children having to undergo medical procedures or feeling ill, and being each with very different educational histories, teachers have to be constantly responsive to the needs of each child at the *Royal Children's Hospital Education Institute (Australia)*. The aim of the institute is to assist children who are in the hospital to remain or re-engage with their education.

Many students become demotivated if demands are too high for them. If the students' feeling of demotivation and frustration is revealed through the energy diary, the demands may be adjusted so that students are able to cope with them. The teachers' main task at *REOSCH (Bern, Switzerland)* is thus not to motivate the pupils but to see to it that the pupils are not demotivated

> because of demands that are too high. The underlying idea is that if high – but not unrealistic – demands are made and the pupils are able to cope with them, intrinsic motivation will develop automatically.

It is not surprising that the individualisation of information, communication, and materials permitted through technology is referred to as an important means through with to realise this principle.

> At the *Australian Science and Mathematics School (South Australia, Australia)*, an online curriculum is available through the school's e-Learning portal in order to enable students to personalise their learning. Students can access learning content from other grades: some students in Grade 10 study at a Grade 11 level and some students from Grade 12 already take first-year courses in mathematics and science subjects at Flinders University.
>
> The teacher-pupil message exchange in e-classroom enables individual communication of teachers with pupils in the *Internet Classroom, Kkofja Loka Primary School (Slovenia)*. Others in the e-classroom cannot see those exchanges so that the learners can trust matters they otherwise would not reveal. This kind of communication not only contributes to better knowing the children but also strengthens mutual confidence between pupils and teachers, and it encourages their personal responsibility. That is particularly desirable when the teacher gives instruction to a larger number of pupils whom (s)he meets only once or twice per week for regular teaching.

The following two examples are less summaries of practices than reflections by the researcher or the professional on the ways that teaching is adjusted to the different levels and abilities of the learners.

> At the *Europäische Volksschule Dr. Leopold Zechner (Austria)* the assignment to the observed groups was partly done by the teachers, partly by the learners, who asked to be placed in this or that group. Mostly students are habitually in one or the other group according to ability. In observing the groups we could not see a difference in the content of the teaching being "toned down" for the lower ability students. The division seemed mostly to allow teachers to talk to a smaller group, facilitating higher monitoring of all students in each group, and then to support them individually while working through problem sets. In the lower ability group, the teacher did more one-on-one consulting of individual students after the general introduction for all in her group, than in the higher ability group.
>
> The same activity presented different difficulties to each child and, according to their needs, the API Ramiro *(Itinerant Pedagogical Advisor (API) programme, Conafe, México)* offered suitable guidance and helped them realise they were able to do the work in recognising the different efforts and progress they made. As he articulated it:
>
>> We try to integrate activities that have different complexity levels; even when it is the same content, we vary the difficulty level and depending on what children know, their abilities, their capacities we guide the activity to what they can solve, to what they can understand. This way we are conscious of their differences, because if we plan the same activity for the three levels with no variations it won't have the same impact since we would put some kids at a disadvantage ... According to the activities planned by the instructor, we think of the strategies and the children that will be tutored.

Learning matrices

Recording individual progress in a formal way, with the active involvement of the learners themselves, permits the information to move from inside the teacher's head to become more visible and useful – to the learner, to the teachers in general, and to others (including parents). Chapter 5 discussed the theme of "information richness" (and of transforming information about learners and learning into usable knowledge).

> At *Mordialloc College (Victoria, Australia)* the individualised learning approach is guided by each student's "learning matrix" – a two-dimensional grid made up of a series of vertical and horizontal axes used to structure the content of learning and capture the student's learning progress. It is based on the "Victorian Essential Learning Standards", which is a set of common state-wide standards that schools use to plan student learning programmes, assess progress and report to parents. The learning matrices, which are kept by students in a learning folder, are used for regular conversations between teachers and students about the learning progress being made. They can also be used for self-assessment purposes by students.

At the *John Monash Science School (Victoria, Australia)* and the *Courtenay Gardens Primary School (Victoria, Australia)* "individual learning plans" are developed for each student which helps students to find their pathway through the range of curriculum offerings.

> Every week the pupils plan and assess their own learning in the *Institut Beatenberg (Bern, Switzerland)* with the help of the Layout, supported if needed by their personal coach. The planning of their key topic of the week is particularly important. They discuss their achievements in the weekly appraisal interview with their personal coach, and together they draw conclusions. The weekly presentation of the pupils' work also helps them to reflect on their learning progress.
>
> Working with checklists supports individualised learning processes at the *ImPULS-Schule (Thuringia, Germany)*. For orientation and for planning purposes, the requirements are made very transparent.
>
> > Supported by the checklists, the instructive element of the learning process is getting individualised. Individualising is necessary because the pupils have different pre-knowledge, successes in learning processes, and learning strategies. The checklists give them an orientation. (Teacher)
>
> The personal orientation is an important precondition for an effective handling of differences; the mixed-age groups make individual learning paths, learning speed, and learning strategies possible.
>
> At the *NETSchool (Victoria, Australia)*, which targets young people at risk in the formal system, learning is organised around individualised learning plans and each student has a mentor who oversees their learning progress, resolves communication issues, visits homes to install and check online-learning equipment and develops the individual plans. NETschool learners log their activities in a reflective journal which is shared with their mentors.

Assessment for learning

The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning.

Research has shown just how important assessment is for student learning. Students need regular and meaningful feedback, while teachers need to assess progress on a regular basis to adapt teaching and materials to their needs. Learners need to understand what is expected of them. Assessments should be consistent with the learning objectives, for otherwise it will be providing information tangential to the main purpose of the learning. In general, assessment can be seen as the bridge between teaching and learning.

In the innovative learning environments included in our study, the key role of assessment is recognised. It is an integral part of the individualisation process just examined and of supporting the learning that is so central to all of them. As the principle states, it is partly about making very clear what the learning is for and how to know when it has been successfully achieved. It is partly about ensuring that the assessment is sensitive to individual strengths and weaknesses so as to adapt activities and materials to the current needs of students so that all students can optimally realise their potential. It is partly about valuing feedback so that the assessment serves the formative purpose.

Clarity of expectations and the general role of assessment

The first part of this principle is very much about the nature of the learning organisation – how it places assessment within its broader aims and expectations about learning and how these are communicated effectively to the learners. These are fundamental in the case study learning environments.

> For the *Instituto Escuela Jacint Verdaguer (Spain)*, evaluation is one of their most valuable learning instruments: it does not consist of periodic and final exams that are hidden so that nobody knows what they will be asked about. Results are not a number showing students' acquisition of knowledge as compared to the rest of the class or the standards agreed by teachers for the subject. Instead, each evaluation considers each individual student and reflects his or her progress over the preceding weeks. They have established the following criteria to define an adequate evaluation:
>
> - Clear objectives in order to observe the processes
> - Process indicators
> - Useful skills to be developed
> - Specification of similar situations where students can apply what has been learned
> - Information given to students about what they will be asked in the evaluation.
>
> Regular meetings to discuss student work and student rubrics are two methods used at *Courtenay Gardens Primary School (Victoria, Australia)* to develop shared understandings of the expectations of student learning. All learning and planning is subject to a systematic testing programme: individual learning is "measured or

identified through pre- and post-level tests" as well as through on-going cycles of diagnostic testing. Individual Learning Plans are often generated as a result of the on-going assessment cycles, which are documented. The rubrics are used with students to clearly set out expectations which are to be achieved. Student checklists are also used for students to refer to in successfully completing any task.

Teachers at *Instituto Agrícola Pascual Baburizza (Chile)* must let students know the objective of the class. At the end, teachers must ask students what they have learned, through formative questions to the group. By doing this, teachers can identify those aspects that have to be reinforced when starting the next class.

A further innovation at *Lobdeburgschule (Thuringia, Germany)* is in the assessment practice. Assessment is not only used for ratings but is a fundamental process to support self-regulated learning – assessment of content knowledge, but also of the methodical, personal and social aspects of learning. This calls for specific criteria of evaluation which are made transparent for the learners so that the process of assessment is more flexible and comprehensible:

- Formulate a critique and at the same time give pointers for improvement.
- Make expectations clear for the pupil.
- Describe in detail positive and/or negative tendencies in the learner's development.
- Give detailed advice for further development.

The assessment philosophy of the *Discovery 1 and Unlimited Paenga Tawhiti (New Zealand),* is to ensure that all assessment positively impacts student learning and is appropriate to the student's learning goals. No testing takes place unless it enhances and benefits the learning process and allows the learning advisor to work with students to plan the next step.

At the *Jenaplan-Schule (Thuringia, Germany)* not only the cognitive aspects of performance are relevant, but also social learning, the ability to apply oneself, self-reflection, and self-assessment abilities. The transparency of assessment criteria is thus important for both students and between teachers and students and the use of portfolios contributes importantly to this.

A complex learning environment requires complex evaluation and assessment. Hence, together with grades for assignments and projects *Mevo'ot HaNegev (Israel)* also issues reports on matters such as learners' performance, arriving in class on time, bringing school supplies to class, task performance, teamwork, involvement in learning and in campus activities, and so on. Though all learners are required to submit the same tasks on the same date and undergo the same evaluation process, the content and emphasis of the assessment are unique to each learner.

The multicultural programme at *Miwon Elementary School (Korea)* has been consistently evaluated according to students' achievement of the learning goals set for the programme, giving formative feedback. Self and two-way evaluation and performance tests are applied; thus, the integration of the goals-evaluation-formative-feedback framework has facilitated students' understanding of other cultures and of multi-culturalism.

Several of the case study learning environments integrate assessment into detailed processes of goal-setting and recording so that learners and teachers know where each individual learner is and what is expected of him or her.

> Students in the *Institut Beatenberg (Bern, Switzerland)* fill out a so-called "Smarty" for every learning task they do on a daily basis, which is a form in which students enter the goal, the procedure and the intended proof of learning at the end of the task. The proofs of learning have to be concrete, checkable products such as a short essay or an oral presentation and are either determined by the learning coach or suggested by the student.
>
> The learners have to plan, monitor and reflect the learning process at *ImPULS-Schule (Thuringia, Germany)*. They take time every morning for planning the aims of the day and the week with the help of their individual learning diaries. An important aspect of the work is the learning contract which is understood as a result of former school reports. The contract includes aims for the whole year. These aims are fundamental for the weekly and daily learning aims.
>
> For every term, each pupil at *One-room School, Gesamtschule Lindental (Switzerland)* has a weekly diary of individual learning objectives – including not only learning content but sometimes also methodological aspects – and these constitute the pupils' weekly plans and are agreed with the parents. Every Monday the pupils get worksheets that the teacher prepared geared to the pupils' individual learning objectives of the term and taking into account the learning progress of the past week. The pupils then copy these new tasks into their weekly diaries. All tasks have to be completed and handed in by the end of the week to be checked and corrected by the main teacher, even if they have already been checked by the pupils themselves. This procedure is chosen not because the pupils might overlook a fault or misjudge their ability to cope with the tasks, but because it allows the main teacher to keep track of the pupils' learning progress, which otherwise might remain hidden to him in this instructional format. The teacher's weekly assessment of the pupils' progress thus forms the basis for the next weekly plan. Every Friday, each pupil completes his or her weekly plan in a one-on-one interview with the main teacher.

Detailed feedback

The use of logs in a number of the cases was discussed in Chapter 5 in relation to how these case study learning environments are "information-rich" about the learning taking place in a formative cycle of design and redesign. In this chapter, some of the different ways in which evaluation and feedback are integral to teaching, learning and the work of the learning environment are discussed in relation to the learning principle in question.

> Assessment at the *ImPULS-Schule (Thuringia, Germany)* has a specific guideline: it is feedback for the learner, not judgement about the learner. Feedback is seen as the foundation for reflection and development of the pupil's own learning. Thus, assessment is the spur to new learning and not just an end point.
>
> Teachers at *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* spoke about the ways they are continually working to build formative assessment into their instruction – pedagogical encounters that are part of the fabric of instruction – viewing formative assessment as a process.
>
> In the *Community of Learners Network (British Columbia, Canada)* feedback is made concrete through group processes such as A-P-E (Advisor, Presenter, Encourager

discussions) and feedback sheets such as "Two Stars and a Step" or "Stars and Next Steps" frameworks which students take away and apply to subsequent learning tasks. Most feedback occurs during formative stages of learning activities when they are in progress. The explicit use of learning intentions is evident in the extent to which students within these environments are able to articulate the purpose of what they are doing and why. The key goal of learning intentions is to help create a purposeful orientation.

At the *Enrichment Programmes, Rodica Primary School (Slovenia)* students keep a portfolio of personal achievements with products, files, assignments and short teachers' reflections. The teachers use questionnaires and other instruments to evaluate the learning progress. There are regular student-teacher meetings to talk about the students' progress, and the students also present their results and products in public, in part by using films or multimedia presentations or during art exhibitions.

An important part of the *Jenaplan-Schule (Thuringia, Germany)* is the application of portfolios. The students establish an assessment folder in which are included all texts and further products from different school subjects and projects, and the teacher possesses the same. At the end of the half-year and the year, students reflect on and discuss their portfolio as part of their individual self-evaluation, and prepare themselves for an evaluation talk with teachers and their parents.

Assessment and feedback can become a very visible part of the organisation of the learning environment and of its routines. In some of the learning environments, the assessments are being carried out with the help of new technologies.

E-classrooms enable computer-assisted assessment of knowledge at the *Internet Classroom, Kkofja Loka Primary School (Slovenia)*. By completing tasks and assignments online, students can get immediate feedback about their success and the mistakes they made. Teachers get a good picture of their students' activities: when and how much time they spent in an e-classroom, which sources they were reviewing and which assignments they completed. Parents also have access to parts of the e-classrooms, which enables them to monitor the activities that are in progress in individual subjects, check their children's work, and offer them support.

Every week, students at the *Institut Beatenberg (Bern, Switzerland)* plan and assess their learning activities and define specific learning goals for the week, if necessary with the help of their personal learning coaches. Towards the end of each week, the progress made is then discussed with the learning coach. These weekly meetings are used to check and record the proofs of learning produced by the students. Students who share the same coach present the learning activity of the past week to each other to elicit feedback. On the weekends, the students take their Layout home to their parents to show them what they have learned during the week.

Assessments are announced in the weekly plan at *REOSCH (Bern, Switzerland)*, yet these differ in many ways from those in other Swiss schools. Results are not expressed by a traditional mark but on a four-level scale: excelled – fulfilled well – fulfilled – not yet fulfilled. Learners check and mark their assessments of learning success on their own, with teachers checking them only as a second step and signing to confirm completion. The comparison of self-assessment and that of

the teacher helps the learners develop a differentiated perception and evaluation of their own achievements, which is important in "resource-oriented learning".

Value is placed on the processes rather than the products of learning at *Mordialloc College (Victoria, Australia)*. Teachers structure regular formative assessment conversations with students around the tasks they are undertaking. They support student progress through discussions of learning in the planning, doing, studying, and acting stages.

Several times a year, students, parents and Tutor Group teachers at the *Australian Science and Mathematics School (South Australia, Australia)* meet together and the student takes responsibility for leading an assessment learning conversation. Students are supported in their preparations for the 20-minute reflective conversation by their tutors who assist them in gathering information about their progress towards learning goals, including the use of assessment results. These Learning Conversations replace the more traditionally issued written reports and are also assessed as part of the requirements of completion of the South Australian Certificate of Education.

The very demanding nature of objective-setting, assessment and feedback in many of these learning environments implies, as is made explicit in the next entry, a different role for the teacher.

The strong focus on the individual learning process at *Jenaplan-Schule (Thuringia, Germany)* requires a large number of formative diagnostic instruments, such as the learning diary or portfolio. The stronger the focus is on learner participation in learning assessment, the more the role of the teacher has to become oriented toward the learner. Therefore, the professional role of the teacher must change. In contrast to teacher-centred instruction, self-regulated learning can be realised within these learning environments.

The strong focus on the individual learner, and the endeavour to ensure that each knows what is expected and how well they have achieved, can reap benefits in terms of learner engagement and motivation (Principle 1).

In the *Europaschule Linz (Austria),* a strong emphasis is placed on communication: teachers talk about their lessons and discuss what went well, what went wrong, what the reasons for failure might have been and what they could do differently. They can also draw on another information source: a feedback sheet for teachers who receive feedback on their teaching from their pupils. The comparative study showed that the pupils have a much more positive attitude towards school, and towards learning in general. They approve the grade-free assessment system and many of them regard the detailed feedback to be very helpful in recognising their strengths and weaknesses. Their evaluations of their own abilities show a stronger sense of self-efficacy (i.e. their belief about their ability to perform actions that lead to desired ends) than in the other control school.

Horizontal connectedness

The learning environment strongly promotes "horizontal connectedness" across areas of knowledge and subjects as well as to the community and the wider world.

Complex knowledge structures are built up by organising more basic pieces of knowledge in a hierarchical way; discrete objects of learning need to be integrated into larger frameworks, understandings and concepts. The connectedness that comes through developing the larger frameworks so that knowledge can be transferred and used across different contexts and to address unfamiliar problems is one of the defining features of 21st century competences. Learners are often poor at transferring understanding of the same idea or relationship in one domain to another. Learning environments need to promote "horizontal connectedness": students need to learn through integrating pieces of knowledge into larger frameworks in order to transfer this knowledge to new situations and use it across different contexts. The community and the wider world provide a raft of opportunities and sources for learning, as do learner homes. Meaningful real-life problems have a key role to play in bolstering the relevance of the learning being undertaken, supporting both engagement and motivation.

Connecting across subjects and topics

Many of the case study learning environments organise learning around specific real-world problems that tap into several subjects at once. The aim is often explicitly to make connections and to see "the bigger picture".

> The principal at *Colegio Karol Cardenal de Cracovia (Chile)* reported how he realised that teachers in general were not a source of inspiration for their students and that they moved from one subject to other without investing in their teaching quality. In his perception, traditional education fires disconnected contents at students in which it is more important to be quiet and passive than to be really learning. He decided to motivate and attract students and parents with a new, active, dynamic and interactive system.
>
> At the *John Monash School (Victoria, Australia)*, students focus on climate change in one semester, for instance, bringing in a number of different disciplines. They learn about its natural scientific basics studying concepts from biology, chemistry and physics, but also discuss the social effects as well as the ethical dimensions of this world-wide problem. The design of the science curriculum seeks to develop "big picture understandings of science in the world" (teacher).
>
>> This year, across the core science studies the teachers have focused on integrating core ideas in topics such as light, across the major science disciplines: It is often easier to think about biology, chemistry and physics through the different natural occurrences in the world, so it makes sense to students to link these ideas together under a core theme. This has been a different way of conceptualising learning for our learners, and has been challenging for teachers also. (Head of Science)
>
> Students work on meaningful problems and the curriculum is built around "inquiry cycles" within the *Community of Learners Network (British Columbia,*

Canada). The cycles are framed by an over-arching inquiry question on a specific topic designed to bring together the learning across all curricular areas.

At the *Institut Beatenberg (Bern, Switzerland),* the Units occur periodically and last one full afternoon, with six Units in the school year. They cover topics from the natural sciences, geography and history, and learners may choose from different Units. They are taught by learning coaches and cover subject matter not dealt with in the subject settings. It is an activity-based form of learning organised around small projects. The combination of learning and practical work, production and hands-on experience aims to provide a comprehensive learning experience.

Epochal projects provide the opportunity to deal with a theme in a more extensive way than usual at *Lobdeburgschule (Thuringia, Germany)*. The themes of the epochal projects are seen to be more than a sum of various disciplines: they help to anchor school topics in contexts with a clear reference to applications.

> "We are now working the whole week on one topic. ... I find it better." "Through this continuous work we learn more about the whole topic than by the work at several individual topics." "Learning is more intense." (6th grade learners).

"Connectedness" is the principle summed up by one of the teachers at the *Australian Science and Mathematics School (South Australia, Australia)*, including the potential for synthesis and deep learning:

> Our strength is our commitment to interdisciplinarity ... it provides everything. ... Relationships, curriculum ..., professional relationships. It's holistic. ... It defines what we are and we look at a person in a holistic way. ... We really try to cross the boundaries of subjects. ... So many times we have these moments when something happens here ... something happens there and they come together.

Connectedness to the community and wider society and economy

In many innovative learning environments, "inquiry-" or "problem-based" learning are defined by real-world problems and carried out with real-world partners: universities and vocational training centres, the local business world, libraries, museums, theatres and sports clubs. The previous chapter showed how much emphasis is placed by many learning environments to foster their wider partnerships. We revisit some of these connections in this chapter in their demonstration of the "horizontal connectedness" being promoted by the learning environments.

The connection between school and the economy activity of the surrounding community is exemplified in the *Instituto Agrícola Pascual Baburizza (Chile)*. The education of these students is guided by a group of farmers from the community, who are part of the school board and make sure that what is taught at the school is linked to real needs: "learning by doing and producing". Internships must be done in real situations to train people and professionals – the students learn about employers' demands and it is expected they will continue to develop throughout their professional lives. All that students learn in internships must have a practical application. All of this is done at the countryside, the "big classroom".

The early childhood development centre *CENDI (Nuevo León, Mexico)* is not an institution withdrawn into itself and apart from "real life", but on the contrary, it is

from the daily life of the community, its families, its neighbourhood stories, social and demographic developments and traditions that it draws significant content to enrich its educational programme.

The *Culture Path programme (Finland)* is for all elementary schools of the city and involving the community in students' learning process. Students follow one "path" for each grade level, such as the "library path" or the "music path". In so doing, students visit at least one local cultural institution or other cultural destination outside the school environment during the school year. These field trips are accompanied by various pre- and post-learning activities at school and each path is planned according to the requirements and the curriculum for the grade level in question.

Another kind of boundary crossed was that between participating in school activities, on the one hand, and contributing to adult activities outside of school, on the other. The students engaged much more seriously in measurements that were similar to those reported in the national media. For example, the students asked more insightful questions, and realised that conducting the measurements and documenting the results was surprisingly hard and messy. *(Liikkeelle! (On the Move!), Finland)*

At the *Enrichment Programmes, Rodica Primary School (Slovenia)*, students participate in voluntary activities such as helping nursery school teachers or helping in schools for children with special needs.

One of the unique features of the *Dobbantó (Springboard) (Hungary)* programme is that the location of study is not only the classroom, and this is by design: there are occasions for learning outside the school that are part of the curriculum.

At the *Yuille Park P-8 Community College (Victoria, Australia)*, the school and the community are very closely linked as part of the "Community Learning Hub", which includes education, health and facilities for all members of the community. The building is designed so that the community facilities can be accessed from within or outside the school. Having access to these is particularly important for the community, as it is one of the most disadvantaged in Victoria and many parents are unemployed.

The school library at *CEIP Andalucía, Seville (Spain)* supports the publication of the school newspaper, *Nevipens Andalucía*. "Nevipens" means "news" in Romany. The idea of the newspaper is to get students closer to the press and make them assume the role of journalists. They prepare the different sections of a newspaper: leading article, pieces of news on the school and the neighbourhood, culture (with a section on children's literature), reading and library, citizenship, puzzles, dedications, etc. The newspaper helps to open communication and participation of families and other educational agents of the neighbourhood and develops linguistic communication and social citizenship skills in learners.

Part of linking up to the wider society is the natural one of social media and the lives of the "New Millennium Learners" beyond school classrooms (OECD, 2012). As expressed by one teacher in *Lobdeburgschule (Thuringia, Germany)*:

> Of course, media, especially new media, determine the life reality of the new generations more than we can sometimes imagine it. There is always enough cause to broach the issue of media in lessons and to use the media. ... The cultural gap is real and so you have to face it. (Lobdeburg Teacher)

Interconnections between the principles

Many of the practices address several principles at the same time, as is well illustrated with the use of assessments. In many cases, students monitor and assess their own learning process and their accomplishments (principle "learner centredness"), the assessments are highly individualised (principle "sensitivity to individual differences"), and are thus much more motivating (principle "responsiveness to motivations and emotions"). Often, peers (principle "the social nature of learning"), parents and external people (principle "horizontal connectedness") are involved in the assessment strategies.

The principles themselves are highly interrelated and "all the principles should be present in a learning environment for it to be judged truly effective" (Istance and Dumont, 2010: 326). The following two illustrative examples show how the learning environment itself has arrived at a holistic understanding of what it is doing and aiming at.

> *Community Learning Campus (CLC), Olds High School (Alberta, Canada)* created a vision "Where students come first" supported by a teaching model that embraces the learning principles identified through the ILE study:
>
> - Engage all learners by addressing their individual needs.
> - Embark on active learning through project opportunities and problem-solving activities.
> - Offer an interdisciplinary approach which allows learners to design projects based on their multiple intelligences.
> - Establish personalised learning communities.
> - Develop interactive, dialogue-based teaching.
> - Support teachers to become coaches, mentors, moderators and facilitators of learning.
> - Infuse technology into learning opportunities.
> - Promote life-long learning.

The *One-room School, Gesamtschule Lindental (Switzerland)* homepage might have been written by reference to the set of the ILE learning principles:

> "The one-room school in Lindental is a place for the development of the individual." We are distinctive in our high degree of individualisation. Weekly plans for every pupil are generated every week and are adapted to the individual learning progress. Achievement is not primarily assessed in relation to age but is measured by the individual pupil's development.
>
> The mix of different age groups results in natural and social learning situations. Mutual responsibility is not imposed for its own sake, but there is a natural role allocation "like among siblings". These interpersonal dynamics are considered to be character-building.
>
> "We strive for a learning atmosphere that is free of fear, and we don't use disciplinary measures". The older pupils not only have the obligation to help the younger ones, but they also have the right to reprimand them if necessary. The mix of age groups has a positive effect on the discipline in the classroom.

"Our one-room school integrates weak children as well as gifted ones". The teachers at Lindental respond to every pupil, from the first grader with a learning disability to the high-achieving ninth grader.

"Our school takes advantage of its small size". Lindental school is able to react flexibly and unbureaucratically to the changing needs of society and whenever possible, offers such special learning opportunities to suit the pupils' interest, such as early English classes starting in grade 3, even though such classes are not part of the Bernese state school curriculum.

Concluding summary

In summary, the learning activities and practices in the cases amply confirm what research tells us makes for effective, powerful learning and what in practice the learning principles actually mean. This chapter has shown how the learning principles developed in *The Nature of Learning* (2010), which synthesise the knowledge base from research on learning, are already put successfully into practice in real educational settings around the world. Particular practices often address more than one principle at the same time. Naturally, they are not realised in the same way and always need to be seen and interpreted against the backdrop of the local context of the respective innovative learning environment. However, considering that the cases came from a number of different countries and contexts, there is a remarkable number of similarities. As well as confirming their fit with the lessons of research, the practices of the innovative learning environments covered by this report can serve as encouragement and inspiration for others looking to make significant teaching and learning change happen.

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Chapter 8

Creating and sustaining innovative learning

This chapter brings the different dimensions and insights about innovative learning environments together. It focuses on three components or layers – the "pedagogical core", the "formative cycle" within the organisation, and partnerships – as well as how the learning principles should be at the centre and permeate throughout. These provide the characteristics towards which contemporary innovative learning environments should aspire. The chapter looks at how some of the traditional fundamentals of schooling are being rethought in the innovations: the constraints of proximity and distance and the balance of the social and the individual. It revisits the four "pumps" of innovation of earlier OECD work as well as identified barriers to innovation. These give the key factors on which to focus in growing and sustaining innovative learning environments: evaluation and evidence, technology, organisational change, and system building and transformation.

Innovative Learning Environments – the ILE framework

The chapters of this report have presented a framework for addressing and developing learning environments, iteratively using the experiences of the case studies both to illustrate the different dimensions and to refine them. The framework 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" – as well as a fourth transversal requirement that the learning principles should be at the centre and permeate throughout all of these.

Innovating the "pedagogical core" of the key elements and their organisational relationships

The elements and relationships at the heart of each learning environment we understand as the "pedagogical core". This is composed of four core elements: **learners** (who?), **educators** (with whom?), **content** (what?), and **resources** (with what?). These basic ingredients do not by themselves determine the nature of the learning environment and of outcomes as there is no guarantee that these elements will be brought together and implemented in effective and innovative ways. But at the same time rethinking each of these core elements – each one by itself and especially all four together – is to address the deepest core of any learning environment (Chapters 2 and 3).

The learners will often be given as far as the learning environment is concerned and defined by such factors as geographical proximity but learners may certainly be added in innovative ways as when, for instance, parents become learners themselves or when learners are brought together from a distance using communication technologies. The term "educator" has often been used in this report to emphasise that others may be brought into the teaching: different experts, adults or peers to work with teachers or act as educators is routine in many of the case study learning environments. Many approaches may be taken to innovating content. In this report, this has included: deliberately developing 21st century competences including social learning; making connections across traditional subjects through inter-disciplinary approaches; as well as emphasising specific knowledge domains such as language or sustainability. Regarding resources, the focus has been particularly on the use of different digital resources as well as innovations in the facilities and infrastructure, including the definition and use of learning spaces.

Organisational dynamics and choices relate these elements (Chapter 4). They are so familiar to schooling routines and cultures that often they pass unnoticed but in reality they powerfully structure what takes place. The predominant role of the single teacher, highly segmented classrooms, standardised timetable structures, and other traditional approaches to teaching and classroom organisation represent the ingrained organisational structures that the innovations in this report have looked at anew just as they have innovated the core elements.

This report has drawn on the cases to focus on four sources of change in these core relationships: different ways of grouping teachers, regrouping learners, rescheduling learning, and changing pedagogical approaches and their mix. By rethinking standard group sizes with educators and learners, sometimes with large groups of learners working with several teachers through to small group and individual study, greater flexibility is introduced to do different things at different times. Innovating the elements of the core goes hand in hand with innovating the organisational dynamics that relate them.

The formative cycle – learning leadership and design, evaluation, feedback and redesign

In the powerful 21st century learning environment, the organisation enjoys focused but distributed learning leadership to create strong visions and corresponding designs and strategies. The learners themselves are privileged and influential players. The organisation operates formatively: information-rich about the learning taking place, which information is constantly fed back to the different stakeholders, and into revised strategies for learning and further innovation – "redesign". How this is done in practice is described and discussed in Chapter 5.

In this continuous cycle, leadership is essential to ensure that powerful learning designs are devised and put in place. Teacher engagement and professional learning are key aspects of the design and implementation process, as are the learners themselves. "Information richness" about learning strategies, students, and learning outcomes will quickly become overload unless that information is converted into meaningful evaluative knowledge and unless it can be acted upon by the learning leadership and others. This means that the feedback and reflection process is deliberate, not haphazard. Several of the innovation sites in this study refer explicitly to the cyclical and on-going nature of change, that involves design and redesign unfolding over time, and can lead to transformation when sustained.

Extending environment boundaries and capacity through partnerships

Schools have traditionally been relatively closed institutions, though how closed varies substantially from system to system, culture to culture. The tightness of their enclosure, and the richness of the additional capacity and connections on which the learning environment can draw, represent the third layer in the ILE framework. The contemporary learning environment develops strong connections with other partners so as to extend the environment's boundaries, resources and learning spaces. Such extensions bring in, at the least, local communities (including families); partnerships with businesses, cultural institutions, and/or those of higher education; and other schools and learning environments through networks, all as discussed in Chapter 6.

Creating wider partnerships should be a constant endeavour of the 21st century learning environment and is both outward-looking and about enriching the core and the formative cycle on the inside. Being inspired to innovate and sustaining that drive means to overcome isolation in order to acquire the expertise, knowledge partners, and the synergies that come from working in partnership with others. This can be seen as "capital investment", not so much in the conventional sense of renewing physical infrastructure but in the forms of the social, intellectual, and professional capital on which a thriving learning environment depends (Hargreaves and Fullan, 2012). This is even more critical in circumstances of scarce resources, when more is expected to be done with less, and can be facilitated through the channels of communication opened up by ICT.

Implementing the ILE learning principles

Running through all these different layers, activities and relationships should be the learning principles identified through the first strand of ILE project and published in conclusion of *The Nature of Learning* (Dumont et al., 2010). The "learning principles" in summary state that, in order to be most effective, environments should:

- Make learning central, encourage engagement, and be where learners come to understand themselves as learners.

- Ensure that learning is social and often collaborative.
- Be highly attuned to learners' motivations and the importance of emotions.
- Be acutely sensitive to individual differences including in prior knowledge.
- Be demanding for each learner but without excessive overload.
- Use assessments consistent with its aims, with strong emphasis on formative feedback.
- Promote horizontal connectedness across activities and subjects, in and out of school.

Taken one by one this set defines already a radical agenda. They go against many of the ingrained habits of conventional schooling – when, for example, they insist that learning should be social rather than inherently private; that emotions play an essential role in learning alongside cognitive development; that individual differentiation is necessary; and that the traditional segmentation of schooling should be replaced by horizontal connectedness. Such conclusions may be relatively familiar to those knowledgeable of learning research but are no less challenging to implement because of that: it is one thing to know "as a fact" that research supports practices such as group work or formative assessment, it is quite another to embed these into daily practice, and still another to embed them in the practice of whole learning environments rather than in isolated pockets by particular teachers at particular times. More demanding still, all the principles should be met rather than a selected few.

Desirable features of contemporary learning environments

The framework outlined above, developed iteratively between framing concepts and the fieldwork findings of particular cases, offers a set of defining characteristics to be aspired to by contemporary learning environments (Box 8.1).

Box 8.1. Guiding characteristics of contemporary learning environments

Putting together all these layers and circles means that, in summary, contemporary learning environments should:

Innovate the elements and dynamics of the pedagogical core.

Become a formative organisation through strong design strategies with corresponding learning leadership, evaluation and feedback.

Open up to partnerships to grow social and professional capital, and to sustain renewal and dynamism.

Promote 21st century effectiveness through the application of the ILE learning principles.

Rethinking fundamental assumptions about schooling

The different practices undertaken by the case study sites invite reflection on some of the fundamental assumptions underpinning traditional models of schooling, and how these are being rejected or refined. Technology is one major factor, but not the only one,

permitting such rethinking of fundamentals. One fundamental is about proximity in time and space for teaching and learning to occur. Another is about the balance of the social and the individual.

Proximity and distance

It has traditionally been necessary for learners to be in proximity with one another, sharing space with their teachers, using books and other tangible materials. This could be thought to imply that education must in these circumstances be highly social and interactive, but the familiar stereotype of the old-fashioned school indicates that there is nothing automatic in linking proximity with interaction.

Technology allows for relaxation of these constraints but this does not by itself guarantee innovative and effective teaching and learning: that requires determination and agency to teach and organise learning in new ways. Distance learning is not a new phenomenon but the ubiquity of powerful, inexpensive ICTs, plus increasing sophistication in the design of ways of incorporating those technologies into the learning environment, mean that the scope for breaking with these defining constraints grows constantly. The teacher need not be in front of a group of 20-30 learners, using only materials that are physically present. They contribute to opening up and "deprivatising" educational spaces, creating visibility and breaking down the close association between a particular learning space and a single teacher. They also possess a very large potential for creating communities of learning among students, so breaking with the excesses of the one-way, transmission form of teaching and the absorptive, passive form of learning.

The case study examples illustrate well both how learners in proximity can engage in intense interaction and indeed be active in the design of their own learning environments, on the one hand, and how they can move away from the constraints of proximity in pursuit of "anytime, anywhere", on the other.

Rethinking the balance of the social and individual

Contrasting the stereotyped old-fashioned schooling with the experiences of these and similar innovative learning environments also illustrates the fundamental shift involved in the balance of the social and the individual. This is not a linear matter of moving along a single dimension to have more or less social engagement or private activity but a shifting balance so that learning in the innovation sites is more individual in some respects, and more social in others.

The traditional stereotype school brought together a particular combination of the social and individual. In some respects, it could be described as social with the domination of whole-class teaching and where the notion of personalisation has little place. But, in other important respects, the model is private. It is private in having a highly individualised understanding of learning as something done by each individual inside their heads, without collaboration with other learners. And, it is private in the school being largely closed to wider players to define curricula or to act as teachers or as sources of knowledge.

The learning environments examined in this report have often turned these upside down. Many of them operate highly personalised learning programmes that reject "one size fits all". They seek different mixes of small group, individual research and study, off-site and community work, virtual campuses and classrooms, in with communal teaching and learning with all learners gathered together in the same space and activity. At the same time, as described especially in Chapter 6, they are open to other stakeholders helping to

define strategies, curricula and legitimate knowledge, and to serve as educators. They operate with a social understanding of learning, defined by 21st century content and competences and often involving collaboration.

Student voice

A further shift in the individual vs. social balance concerns "learner voice". This is singled out by a number of the ILE cases as an essential ingredient of their innovation and success. Giving the learners a leading role in the design and implementation of their own learning is clearly to rethink one of the fundamental assumptions about schooling. The stereotyped traditional model is oriented towards conformity and control in which the student's role is essentially as a passive recipient, not an active player and designer. The first learning principle – make learning central, encourage engagement, and be an environment where learners come to understand themselves as learners – flies in the face of the passive "conformity and control" model.

Agreeing on the importance of active learner engagement is not difficult and is placed front and centre of the ILE learning principles. What is more controversial is the extent to which the individual learner ought to be regarded as the central player in the design and implementation of the teaching and learning. The concept of "learning environment" assumes a social definition of how young people should best learn, in which design, learning leadership and teacher professionalism play critical roles. Hence, in the framework outlined above, learning and the ILE learning principles are at the core as opposed to the individual learner. "Learner voice" is clearly critical but as one part of the wider environments, designs and eco-systems of learning.

Moving forward – creating and sustaining change

This section looks at different routes for making and sustaining the innovation that is central to this report in anticipation of the third and final strand of the ILE project on implementation and change. The material reviewed in this report does not give the basis for a thorough examination of how innovative learning environments can be grown at scale and change sustained, but it already opens up consideration of some of the avenues of change.

Generating innovation

A slim but seminal volume on innovation – "Innovation in a Knowledge Economy" – was published in 2004 by OECD. This reviewed the generation and sustenance of innovation in organisations no matter what the sector of the economy and then looked at the lessons to be drawn for education. It identified four sources, or "pumps", of innovation:

- **Modular reorganisation**: rethinking the units and dynamics of the organisation and the possibilities for interconnecting specialisation.
- Exploiting the innovation offered by **technological advance**.
- Engaging in and exploiting **knowledge and R&D** (research and development), and being able to use the fruits of research in design and application.
- **Networking and sharing knowledge** so as to move beyond the limitations imposed by the capacities of single professionals or units, and to create scale in learning or action in organic ways.

Modularity itself is a concept and practice with which teachers are very familiar in courses and classes but it may be much harder to introduce into the organisation of schools and school systems at a wider level. This report is rich in examples of how the innovation cases have devised new organisational arrangements to meet their different challenges. To be able to profit from the benefits of modular reorganisation – assuming this is possible in educational institutions – calls for organisational flexibility and the recruitment, development and application of specialist expertise, as well as the systemic freedom that allows it.

To exploit technology as a source of innovation calls for high basic minima of digital resources, familiarity with and the skills to use them, as well as their integration into basic educational practices and into managing information and assessments. All of these require innovating learning and teaching through technology, not simply to change the prominence of technology in the institution as infrastructure. The ILE framework for learning environments offers a lens for understanding how that potential might be realised, as discussed below.

Exploiting research and evidence on education and learning has been the subject of a great deal of attention in recent years (e.g. OECD, 2007), which is to recognise that much more could be done to make teaching and the organisation of learning more research-informed. At the least, it assumes that the leadership and teachers are conversant with the relevant educational research and their applications in educational settings. As stressed in this report, it is crucially about how that research knowledge can be acted upon in design and in teaching and learning strategies rather than remaining inside the heads of individual school leaders and teachers without action or collaboration.

Innovation through networking calls for working together closely with other organisations, educators, and stakeholders, across sites and learning environments and within the same organisation. Incentives and expectations have to make this attractive, especially if traditionally there are no expectations of professional connectedness outside the limits of the institution. School autonomy will be self-defeating if it is interpreted as isolation. Instead, the autonomy should be about the freedom and flexibility to work with many different partners and communities of practice; Chapter 6 describes how commonplace this is in the case study learning environments.

Barriers to innovation

Different aspects of these "pumps" of innovation are discussed below, but as well as promoting the positive fostering of innovative change it is necessary to address the barriers that stand in its way. A recent OECD/CERI review of systemic innovation in vocational education and training – *Working Out Change* – examined barriers to social innovation in general, including education (OECD, 2009). The general barriers are summarised in three clusters, which in practice closely inter-relate and are all highly relevant to educational change. First, there is an inherent conservatism that can be found both within organisations and in the wider community influencing that organisation summed up as "people don't like change". A second key factor is identified as "the inherent tension between organising and innovating. Change requires much energy from the organisation and individual employees, who are trained in standard practices. This change refers not only to the routines but also to the mental models that organisations develop" (OECD, 2009: 44). The third inhibitor signalled is bureaucratic behaviour, referring to organisations that are hierarchical and where conformity to rules and regulations overrides other forms of behaviour that might seem risky and disturbing of established practice.

The OECD report summarises these as a list of common barriers that are characteristic of the public sector as a whole, including but not only education:

- Risk aversion of bureaucracies
- Political and auditing constraints imposed by performance and accountability frameworks
- Lack of institutional support for innovation
- Inappropriate structures and organisational cultures for innovation
- Silo structures of public agencies, making value across organisational boundaries harder to operationalise
- Uncertain results, increasing the difficulty of winning support for innovation.

(OECD, 2009: 45).

Policies to enhance learning innovation will need as much to address these barriers and blockages, as they will to promote such innovation positively. Their causes lie partly in institutional practices, but often are more systemic as with the performance and accountability frameworks.

Evaluation and impact

"Uncertainty of results" is singled out as one major blockage to innovation. The importance of evidence about learning, and of explicit and well-developed processes of information-gathering, evaluation, and capacity to act on the evidence, are recurrent themes throughout this report. They are integral to the design and redesign processes in "formative organisations".

The demand for evaluative evidence often extends well beyond the formative needs of the organisation to instead address comparative effectiveness. This amounts to the call to be able to "prove" that an innovation has worked and is a positive improvement on what went before. This is especially problematic for learning innovations that are often relatively small-scale and short-lived, that are faced with a dearth of appropriate evaluation methodologies, and commonly in situations of limited resources. It is understandable that there should be an expectation of positive learning impact to accompany the innovation but what is at issue is how this can best be shown.

The case studies themselves report on a variety of indicators of positive impact, with some illustrative examples included here. Sometimes, these are about overcoming the lack of engagement that becomes manifest in absenteeism:

> In *Lok Sin Tong Leung Wong Wai Fong Memorial School (Hong Kong, China)* a significant fall can be seen in drop-out every year.
>
> The decrease in absenteeism in *CEIP Andalucía, Seville (Spain)* has been gradual. The initial percentage was 60%. In 2006/07, it decreased to 30% and to 22% in 2007/08. By 2008/09, the percentage had dropped to 19%.

The measures need to be appropriate for the context and the learners in each case, and sometimes such measurement instruments are designed by the learning environment itself:

> The transitory nature of most students, who are engaged with the *Royal Children's Hospital Education Institute (Australia)* for only short periods of time, and the paucity of documentation available to teachers to enable them to identify

children's learning needs combine to make the development of a standard assessment tool somewhat irrelevant. Instead, the impact and effectiveness of particular educational interventions are measured based upon children remaining engaged or re-engaging in their education despite their health condition rather than based upon students achieving certain levels on assessments or minimising absentee days, etc.

One of the most significant indicators of the impact and effectiveness of these learning environments is in the area of student engagement. Members of the team (at *Community of Learners Network, British Columbia, Canada*) have designed an assessment tool that will allow them to begin to monitor student engagement more consistently.

Sometimes, the proof points are based on system achievement assessments, whether showing improvements or based on some kind of "value-added":

Last year, *Colegio Karol Cardenal de Cracovia (Chile)* got an important increase on the scores for the standardised test which is applied in Chile, SIMCE (System of Measurement of the Quality of Teaching).

The percentage of *Netzahualcoyotl* students (*Los Coyotes, Mexico*) who achieved insufficient results in 2009 national ENLACE evaluation dramatically dropped from nearly 60% in 2009 to 8.3% in 2010. The student's overall performance, on average, increased by 14.7%.

Or, it may be conventional examination results, perhaps supported by other forms of evidence of positive impact:

The academic impact is evident in that over 80% of students are consistently obtaining their first choices in gaining entry to university programmes on the basis of successful year 12 results obtained within the South Australian Certificate of education processes in the *Australian Science and Mathematics School (South Australia, Australia)*.

The percentage of *Mevo'ot HaNegev (Israel)* graduates who earned the Matriculation Examinations is about 80%, which is significantly higher than the national average of 48%. Learners perceive the school in a highly positive light, they report it is fun to learn there, that the teaching methods are different and unique, the contents are interesting and there are good relations between teachers and learners.

There are a number of indicators to demonstrate that the school (*Community Learning Campus (CLC), Olds High School, Alberta, Canada*) is achieving desirable outcomes:

- increased high school completion rates
- increased provincial standardised test scores
- school satisfaction surveys
- strong community support.

Even such standard educational indicators of attainment and engagement as examination results and absenteeism or drop-out are beset by interpretation problems. There is the common phenomenon of a dip in results some time into the innovation. It is impossible to be sure, without a sufficient elapse of years, whether this is real loss of

momentum or instead whether it is the "S-shaped curve" whereby the innovation initially causes disruption and leads to a fall in some measured outcomes prior to embedding and later take-off. Moreover, there is the familiar question, raised in Chapter 1 as a critique of so much work in the "school effectiveness" tradition: how to capture adequately the range of learning outcomes against which a contemporary learning environment ought to be judged? The more that a learning environment moves away from being satisfied with a narrow range of academic results, the more difficult becomes the evaluation challenge.

The distinction should be drawn between the evaluative evidence on which the learning leadership in a particular environment should draw in making its myriad of strategic and day-to-day decisions, on the one hand, and broader evaluations of learning innovations, on the other. It is already a substantial expectation that learning environments actively gather formative information on learning and are able to use the kinds of indicators reviewed above on engagement and achievement which are of immediate interest to students, teachers, parents and the local community, without having constantly to "prove itself" in terms of the full impact of their innovations.

An innovative learning environment can rightly point to a supporting evidence base when it pursues research-based directions such as the ILE principles of learning. To be evidence-informed can thus be through designs, strategies and approaches that put such principles into practice. Meanwhile, it is important to develop new methodologies of evaluation that are appropriate for learning innovation, that can be used iteratively to guide decision-making rather than be available only at the end point. There is need for ways to bring together results from different local, small-scale initiatives in search of more robust evidence of positive impact. This will help to reduce "uncertainty of results", identified above as one of the brakes on innovation.

Technology in innovative learning environments

Technology contributes to all the different components, relationships, partnerships, and principles that are integral to learning environments as outlined above. There is not a single "technology effect" but instead technology can permeate in many different ways throughout learning environments. The ILE Framework offers a lens through which to understand the richness of its potential contribution (Istance and Kools, 2013).

Powerful information and communication technologies can recast all of the elements of the core. It can redefine the **learners**, for instance, by bringing in excluded learners or by connecting together learners who otherwise would be totally unconnected. Technology has the power to redefine the **educators** – the on-line tutor or expert, for instance, or the teacher in a classroom in another school or even another country. The role of digital resources and ICT in changing **content** is also potentially enormous, by opening up a wide range of otherwise inaccessible knowledge, by promoting the so-called "21st century skills" using the media that are commonplace for learners in their activities outside school, and enhancing equity of access (OECD, 2012). The **resources** for learning are obviously transformed using digital resources, as well as the very notion of a "learning space" by activating, for instance, virtual learning environments.

Virtual settings illustrate well how technology contributes to redefining the assumption that learning has to occur in a fixed place at a fixed time with standard batches of learners. Student-driven learning and inquiry, interactivity and collaboration, personalisation and flexibility, are all enabled and enhanced with technology even if all are possible without it. Yet, certain teaching and learning options are not available without a high minimum of technology. It opens up complex learning experiences via simulation or games that cannot

otherwise normally be done. It permits distant communication and collaboration, and brings access to educational materials and experiences of a richness that previously would not have been possible except through such means as a university library (Groff, 2013).

For the learning environment to be a formative organisation the role of technology in organising learning data and feedback is obvious. But it may well come into this cycle in other ways, too. Distributed learning leadership may very well depend on it for communication and collaboration, as might teacher learning using on-line materials, collaborative platforms or social media. Strategic options for learning design and redesign may be critically informed by exemplars available on-line, including any necessary support for it to be sustained.

Technology is often integral to and supports the widening of boundaries and capacity through partnerships, through enabling communication and sharing experiences and knowledge. This is particularly obvious and significant through networking with other learning environments. Sometimes, this will depend on technology for collaboration with others at a distance, sometimes it will rely on more direct forms of face-to-face dialogue and action.

Technology has not been singled out as defining a separate "learning principle" but, far from diminishing our assessment of its importance, technology when well used can critically enhance all the principles.

- Technology has repeatedly shown its value in engaging young learners, hence, reinforcing "learner centredness" and the key role of emotions and motivation.
- Technology facilitates collaboration and joint learning, including through use of social media, hence underpinning the "the social nature of learning" principle.
- Individual differentiation can be greatly facilitated through, for example, more systematic tracking of individual learning paths and achievements and hence also formative assessment and feedback.
- Making connections is a defining aspect of ICT, hence opening numerous possibilities for "horizontal connectedness".

At the same time, the mere presence of technology in the form of computers or pads in a school or as mobile phones in the pockets of learners is not by itself sufficient and their application needs to be "learning-centred", not "technology-driven" (Mayer, 2010).

Organisational change and system transformation

The barriers to innovation identified above prominently include organisational factors: organisational risk aversion and conservative cultures, and excessively hierarchical arrangements. Overcoming them will often call for wider policy strategies that create conducive conditions and climates, given that they involve relatively intangible but no less powerful cultural assumptions and behaviours. Policy leadership can prove invaluable in helping to shape such conditions and climates so as to make the difference between learning innovation being regarded as mainstream activity or viewed as marginal to core business.

Organisational routines that have at their core the aim of keeping learning at the centre of all school activity represent a promising route for further development. These set out to erode the "grammars" or organisational cultures and behaviours of schools that can prove so resilient (Tyack and Cuban, 1995). They do so directly through collaborative routines

defined by student and professional learning so displacing dysfunctional organisational and individual cultures rather than indirectly through advocacy. They include approaches such as Lesson Study and Learning Study associated particularly with Japan and Hong Kong as summarised in Cheng and Mo (2013) (see also Stigler and Hiebert, 1999; Pang, 2006). They also include the "kernel routines" discussed in the previous ILE volume, summarised thus:

> When chosen purposefully and implemented well, new organisational routines can function as powerful instruments for transforming school practice. Resnick and Spillane (2006) used the term "kernel routine" to denote an organisational routine that has the potential for transforming school practice by "seeding" and "propagating" new forms of practice in schools. … Kernel routines work by connecting and weaving together other organisational routines in the organisation. Rather than attempting to drive out current practices, the kernel routine recruits and "re-purposes" the familiar ways of doing things … [with] clear articulation of the steps in the routine, the rationale for these steps, and the requirements of each one. This calls for training procedures and a set of tools and artefacts for performing the routine. (Resnick et al., 2010: 293)

In essence, they are different forms of the formative cycle of learning leadership, design, evaluation and redesign. They get right into the heart of the organisation of learning, pedagogy, and professional collaboration and development. As regards policy strategies seeking to introduce innovation at scale with learning at their core, the question is how such "kernel routines" can be encouraged in multiple sites, not just isolated good practice schools. The role of knowledge management comes to the fore once again in terms of good, well-organised information aimed at teachers and leaders on how such routines and practices work in exemplary cases, evidence for their effectiveness, and strategies to grow them.

In making learning central, the question of how the institutional system and the learning system interplay – at the least do not hinder each other, at best build on each other – comes to the fore. Hence, beyond creating an innovation "climate change", an important additional objective of policy strategy is to foster greater consistency, even synergy, between learning organisations and environments, on the one hand, and the institutional system in which it is located, on the other. One important route to greater consistency involves the performance and accountability systems in place, singled out in the list of barriers to innovation above: "the political and auditing constraints imposed by performance and accountability frameworks".

The recent systematic review of assessment and evaluation carried out by the OECD – *Synergies for Better Learning* – focuses very firmly on this factor:

> Evaluation and assessment should serve and advance educational goals and student learning objectives. This involves aspects such as the alignment with the principles embedded in educational goals, designing fit-for-purpose evaluations and assessments, and ensuring a clear understanding of educational goals by school agents. … The point of evaluation and assessment is to improve classroom practice and student learning. With this in mind, all types of evaluation and assessment should have educational value and should have practical benefits for those who participate in them, especially students and teachers. (OECD, 2013: 14)

In essence, this restates the sixth ILE "learning principle" – assessment strategies fit with learning goals and expectations, with strong emphasis on formative feedback – at the system as well as the organisational level. The challenge is to avoid assessments that are tangential to learning improvement and at worst are inimical to it.

In complex eco-systems of learning, there will be a wide range of approaches. Some will be operating within the "pedagogical core" of learning environments, changing learning cultures and capacities, while others will be less direct and more systemic. In contemporary learning systems, "systemic" includes but extends well beyond the institutional school system as it is delineated through formal governance.

Contemporary learning environments will not be sustained by working in isolation but instead need to be connected to diverse networks and professional communities, learning from others. Developing the "meso" level via diverse networking and partnership arrangements is critical for growing the prevalence of innovative learning environments. The most recent Global Education Leaders Programme report (GELP, 2013) refers to the "nested communities" approach to diffusion: organic growth and change so that different approaches emerge and co-exist, each with micro-systems of networks around them. This is an organic understanding of developing "learning systems", which builds on the formal institutional education system and may often be located within it, but which extends well beyond it. It involves a myriad of connections which are invisible as regards the formal system parameters but which are fundamental to the quality and dynamism of the learning taking place. The aim is uniformity of high ambition and of learning appropriate for 21st century societies and economies but not uniformity of provision and approach.

Creating such learning systems calls for a shift in instruments and approaches to drive such change. It is not about diminishing the role of policy in favour of local action but reviewing what policy can achieve through such means as the creation of knowledge and information, incentives, capacity building, and appropriate governance arrangements. Fullan (2011) describes many of the traditional reform instruments as the "wrong drivers" – accountability pressures, individual teacher and leadership quality approaches, technology, and fragmented strategies – because they do not lead to culture change and re-professionalisation, and often de-motivate. Instead, the "right" drivers include the focus on the learning-teaching-assessment nexus; social capital to build the profession; pedagogy matching technology, and developing systemic synergies.

These are entirely consistent with the messages in this report. They match closely the remaining ILE work on "Implementation and Change" and other international collaborations (e.g. Fullan and Langworthy, 2013), that are aiming both for pedagogical change and deep learning on the ground and system transformation, with a key role for networks and clusters as the "meso" level between the two. Far from such innovation representing a retreat from the fundamental goals of education and improvement, they are focused firmly and relentlessly on learning itself.

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The case studies mentioned in this chapter can be found at:
www.oecd.org/edu/ceri/innovativecases.htm

Annex A

The case study sites

Introduction

This Annex introduces the reader to the main ILE (Innovative Learning Environments) cases that have featured in this study through profile descriptions of each of the case study sites. These were selected for case study research (and referred to as the project "Inventory") from the larger pool of innovative learning environments (the project "Universe"). Not all the cases that are cited in the publication appear in the descriptions below, but only those for which case studies were undertaken. The following capsule descriptions help the reader to gain an overview of the case study set as a whole. Yet, they necessarily omit a great deal of the information about what makes each one innovative and inspiring. The main text above contains much more information about these sites albeit through extracts related to the specific topics in each chapter.

The case study sites

The **Royal Children's Hospital (RCH) Education Institute, Melbourne, Australia** is a place in which the health development of children and young people is extended to include social and education support. It has an Education Institute, with teachers, researchers, and communication and administration teams to assist children and young people to remain or re-engage with their education. The RCH Education Institute's work is underpinned by contemporary pedagogical theory and teaching staff are expected to have a flexible and responsive approach to teaching and learning, especially as learners may be ill or undergoing medical procedures and tests. The Education Institute also uses the hospital community (including multi-disciplinary teams and hospital departments) and external partners (such as local authorities and not-for-profit organisations) to facilitate the inclusion of learning as an important aspect of development for children and young people with different health conditions.

Australian Science and Mathematics School (ASMS), South Australia, Australia is purpose-built on the campus of Flinders University, covering grades 10 to 12, and established to innovate mathematics and science education. Learning activities are inter-disciplinary, personalised, authentic and inquiry-based, linking science and mathematics to other areas of study including cutting-edge technologies like robotics and nanotechnology, as well as to real world issues. The school has ICT-rich open flexible learning spaces for groups of different sizes, collaborative relationships between learners and teachers, and mixed-age tutor groups and support systems. The learners work with an individual learning plan and an electronic portfolio. Learners and parents can access a virtual learning environment that learners use for group work and that contains plans and materials. The

teachers work in teams, and there are extensive activities for professional development and co-operation. The school conducts action-based research to improve its educational practice, and professional learning activities to share knowledge and materials with other practitioners. University collaborations exist with scientists being involved as visiting lecturers and with some learners and ASMS teachers undertaking university studies in relevant areas.

Mordialloc College, Quality Learning Centre and Enquiry Zone, Victoria, Australia is a public secondary school that has at its core personalised learning, team teaching and planning, using flexible spaces as a means of maximising learning. Eight existing classrooms were redesigned as an open learning area, which encompasses the Year 7 Learning Centre and the Year 8 Enquiry Zone. There are family groups of learners with teacher guides; optional and compulsory workshops; learner planning and documentation; engagement in learning; regular formative assessment conversations and development of self-management and social skills. Other designated learning areas include: the Think Tank; a glasshouse; dedicated outdoor areas; as well as a library and the science and arts areas. Flexible learning is continued in Year 9 within the subjects of the Mordialloc Experience Program. The spaces lend themselves to pedagogy which engages learners in personal and interpersonal learning through an integrated oriented approach to curriculum.

Yuille Park P-8 Community College, Victoria, Australia is located on the outskirts of the city of Ballarat in an area of high disadvantage that has been going through neighbourhood renewal for more than a decade. Yuille Park P-8 Community College is at the centre of a Community Hub offering opportunities and facilities for the wider community. Every aspect of the physical buildings, school operations and curriculum has been carefully designed to enable the motto "Living to learn, learning to live" to become a reality for each learner, while staffing structures have been flattened to foster respect and equality in working relations. The new physical spaces in the school have been the focus of an intense design process, leading to a Victoria Department of Education and Early Childhood Development's School Design Award in 2008. The school buildings and layout reflect a strong vision which is also realised through the pedagogical and social approaches and relationships.

John Monash Science School, Victoria, Australia is a Year 10 to 12 government selective-entry specialist senior school that came about through a partnership between the Victorian Government and Monash University. It is in the forefront of new ways of thinking about curriculum and pedagogical practices aimed at "big picture understanding of science in the world" while reconceptualising physical and virtual spaces for effective learning. It uses flexible learning spaces, and has an exemplary culture of collaboration and collegiality, as well as strong teacher commitment to professional learning. The rigorous intellectual pathways for learner engagement and autonomy are enhanced by inquiry-based curriculum and the school's daily practices.

Courtenay Gardens Primary School, Victoria, Australia is a public primary school in a Melbourne suburb characterised by relative disadvantage. The ILE has been developed in response to a number of societal disadvantages; it is characterised by a whole-school approach to learning, and the use of strategies which enable a consistent and predictive approach for learners. Initially focussing on the teaching and learning of non-fiction writing, the school now measures significant increases in achievement in localised standardised testing. This success has led to more recent innovations, including a rich multimedia programme. It has received numerous awards for its continued improvement in learner and staff data, and provides professional learning to other schools to help increase learning outcomes.

NETschool, Victoria, Australia was founded in 2005 as an annexe of Bendigo Senior Secondary College (BSSC), in order to re-engage young people (aged 15-20) in work or study; it is located approximately 150 kilometres north-west of Melbourne. It offers an innovative environment designed to provide positive learning experiences for learners "at risk". The wide-ranging innovations include: a shop front setting; a workplace interior layout; a shortened school week to allow learners to undertake work experience projects; and the use of non-judgmental vocabulary to describe young people and their learning achievements. Individual learning plans are drawn up to accommodate each learner, and include the option of study in a home- (online) or centre-based setting. It is demanding for the mentors and teachers, who use both formal and informal means to assist one another, with support from the director, the professional development unit, and by professional agencies. This multi-level system is both consultative and inclusive. Some of its innovations have since been taken up by mainstream schools.

Europäische Volksschule Dr. Leopold Zechner, Vienna, Austria is for learners aged 6-10. It has a special focus on those from multi-ethnic or migration backgrounds and emphasises language competence and instruction in all languages coming into the school, including language promotion in German (national language), intensive English teaching, courses in mother tongue, and language and culture workshops for other languages (called "*Sprachateliers*"). Parents and community members are highly involved as native speakers who team up with form teachers but occasionally also as learners of German who join their children in the classroom. Other innovations include the use of English as the language of instruction in subjects like sports and arts. The teaching has elements of progressive pedagogy, such as flexible learner groups who work independently with week plans. There is a European studies curriculum that was developed in co-operation with colleagues from other countries. A development team of teachers works on new ideas and evaluates current practice.

Europaschule Linz, Austria is a secondary school affiliated with a university college of teacher education, and functions both as a centre for practical in-school training of teacher-students and as a school with the objective to offer (and to research) optimum learning conditions. Europaschule Linz has significantly evolved over the past 20 or more years. It now has an emphasis on language learning and international contacts, but learners can also choose a science, artistic or media focus. It does not use grades, and learners work in flexible heterogeneous groupings, some of which are integrative. Teaching activities are based on a sophisticated formative assessment system, which is organised as a written feedback portfolio that contains teacher reports and learner self-assessments. The aim is that learning becomes self-managed and intrinsically motivated, and lessons are designed such that learners assume a high level of responsibility for their own and for their classmates' learning.

Community Learning Campus (CLC), Olds High School, Alberta, Canada is an innovative approach to high school, post-secondary and community education, sharing resources and working jointly with a variety of community groups and agencies. It provides an active and holistic educational environment that brings together high school and post-secondary education in one place, seeking to create a seamless transition for learners wishing to enter the workforce, apprenticeship, college, or university. The CLC is both a virtual and a physical learning space in four multi-use facilities: 1) core high school; 2) fine arts and multi-media centre; 3) health and wellness centre; and 4) the Bell eLearning Centre. Delivery is either seminar-based or class-based, both of which are constructivist and organised around project work. A web-based information system provides learners and their parents with summative and formative feedback on a daily, weekly and interim basis

and documents progress throughout a learner's four years at the school. The programmes are organised around four pillars – personal, knowledge, community, and global – and navigation relies on the CLC Learner Map, which is both a framework for individual learner pathway decisions and a graphic enabling community access.

Elementary Connected Classrooms, British Columbia, Canada is realised in an innovative collaboration between mixed-age classrooms (age 9 to 12) from three elementary schools in a geographically isolated district. This ILE features videoconferencing, online collaborative work, online literature circles, and exchange of learner-created multimedia content. Weekly videoconferences of the three classes are delivered by teachers who have a focus area based on their expertise and interest and also manage a complimentary online forum. Inquiry projects and learner collaboration are central components of learning, with learners interacting through verbal questions, sharing smart board work, and communicating in online forums, chat rooms, and by sending messages to each other and their teachers. Each year, there are face-to-face gatherings of all learners in each participating school. The project is introduced in a family night with a live videoconference of all schools, and ends with a celebration session with similar set-up. Parents can access the online platform to get an idea of their child's work.

Saturna Ecological Education Centre (SEEC), Gulf Islands, British Columbia, Canada is an experiential, place-based ecological learning centre on Saturna Island, British Columbia, which learners attend for a semester. Originally designed for grade 11-12 learners, it has evolved into a flexible programme, serving learners from grade 7 to post graduation. The learning is focused strongly on *how* students learn, with a deep appreciation of different generations and of the natural environment. The environment is the main learning resource and the ecological lens runs through all the learning programmes. Among its innovative programmes is "Teaching and Learning", covering theories and practices of teaching and learning and employing this with younger learners as mentors. Among the middle-years learners, about half the time is spent outside the school building working on personally designed small group projects. Learners experience a great deal of inter-dependent, intergenerational learning, and this is supported by "Connecting Generations" – a database which allows young people and older members of the community to connect up for focused "cognitive apprenticeship" opportunities, as well as more general learning from each other.

Community of Learners Network, Nanaimo Ladysmith, British Columbia, Canada is a "mini-network" within the larger Network of Performance-Based Schools in British Columbia. It involves intensive collaboration on applying inquiry methods. The teaching/learning interface is markedly different from traditional modes of schooling. Curriculum and schedules are built around large-scale inquiries that blur traditional school subjects and schedules. Formative assessment and meta-cognition are integral to the learning, as is collaboration through the "Circle Discussion" approach, where learning is co-constructed and facilitated in small groups of four to eight learners, followed by reflective writing and representations of evolving conceptual understanding. Community members with expertise are regularly invited into classrooms, and local resources are viewed as an integral part of the learning environment. Aboriginal place and culture are fundamental. There are approximately fifteen classrooms that fully integrate the core approaches.

Instituto Agrícola Pascual Baburizza, Los Andes, Chile is a private state-subsidised vocational high school with many learners from disadvantaged economic backgrounds. It provides learners with a cross-disciplinary balance of general education subjects (mathematics, languages, science) and agricultural subjects (horticulture, watering and

cattle management), as well as sustainable agricultural practices, leading to a professional diploma as agricultural technician. A strong emphasis is also placed on learning "soft skills" such as leadership, initiative and honesty. Learning is facilitated by teachers who also act as personal mentors by providing guidance and support for groups of ten learners. National evaluations reveal that language and mathematics scores have steadily improved, and improvements have been observed in graduation rates and employment rates after graduation as well.

Colegio Karol Cardenal de Cracovia, Santiago, Chile is in a low-income community with high rates of unemployment and drug problems and caters for learners from kindergarten to 8th grade. It has an innovative organisation as a "state-school" for learners to know how to function in a democratic society: classes represent communities that are like government departments, there is a school constitution regulating behavioural rules, a (symbolic) ministry of justice, a court, elections for student presidents, and learners can actively participate in the school government. In this ILE's own incentive system, the school currency can be exchanged for rewards. The innovations were initiated by the principal to create an environment of strong and caring relationships to help all learners discover their own potential. Scores on national standardised tests have significantly increased since then.

Culture Path programme, Kuopio, Finland is targeted at learners aged 7 to 16 in the city of Kuopio, and aims to enhance their social, emotional, and physical well-being providing them with culture and art through access to the city's cultural services. This is realised with practical tools for teachers to implement goal-oriented cultural education, and by strengthening the co-operation with cultural institutions. The programme is divided into nine "paths" related to art, libraries, theatre, etc., which are designed for the needs and curriculum objectives of a particular grade level, within and across different subjects. Learners visit at least one local cultural institution outside the school environment every year. After eight years on the Culture Path, 9th graders can use the city's cultural services for free with a K9-card.

Fiskars Elementary School, Fiskars, Finland encompasses the whole village community, connecting the school to the surrounding community and using the knowledge of local artisans and artists, the village history and the surrounding nature in education. From the perspective of an individual learner, the Fiskars Model is a six-year learning path. Artists and handicrafts from the village give workshops on topics like woodworks, fine arts, or glass blowing. Main pedagogical methods are learning-by-doing, immersive learning and student-professional collaboration. The local museum also organises workshops on historical periods, and learners contribute to local cultural activities like theatre productions and exhibitions. In this way, they are taught to value and harness the traditions of the village and to respect their own and others' originality in creative work.

Liikkeelle! (On the Move!), Heureka, Finnish Science Centre, Finland is a web service to support secondary schools in reforming their learning practices by means of inquiry-based, multi-disciplinary pedagogy. It seeks to take learning out of the classroom, for instance, to study and evaluate their local environment. Thus far, more than 50 schools have participated. "On the Move" features an open virtual environment in which learners, teachers and external experts interact, exchange information (including using interactive tools and maps), and publish. It presents a range of teaching methods and project ideas for enhancing multi-disciplinary co-operation and inquiry learning as well as tools for teachers to share good pedagogical practices. It offers a step-by-step model for planning, organising and conducting a developmental project in line with the "On the Move" pedagogy. Learning activities have included, for example, mapping the area or measuring air quality.

ImPULS-Schule, Schmiedefeld, Thuringia, Germany is in a rural area, with 123 learners aged 10 to 16, and using the "Jenaplan" reform pedagogy. Its classes are mixed in terms of learner abilities and, in part, learner age. Learning days are structured by recurring routines, like a morning assembly and an end-of-week meeting of the whole learning group, and further include blocks of time allocated to cross-curricular work and to the planning of individual learning activities interspersed with exercise breaks. Learners present their work in weekly sessions. ImPULS uses learning diaries and learning contracts, and supplements regular school certificates with individual report letters. Its approach to preparing learners for choice of a profession (e.g. yearly practical projects in different companies from grade 7 to 9, portfolio work, etc.) has received several awards.

Jenaplan-Schule, Jena, Thuringia, Germany includes learners from kindergarten age right through to age 20. Learners with minor physical or learning difficulties are integrated in mixed-aged classes as well as learners with difficult school biographies. The teachers co-operate in teams, both for team-teaching and peer-coaching. Like the previous case, this school uses many elements of "Jenaplan" pedagogy. Learners work partly in cross-grade and partly in homogenous age groupings, with a strong emphasis on open learning and interdisciplinary project work which is organised with individual week plans. The schedule is periodic with a focus on changing subjects every 3 to 4 weeks in areas like history or geography. Written reports replace or supplement traditional grading, and learners' peer- and self-assessment is emphasised. Monthly round table meetings give parents the opportunity to discuss group-specific problems with the teachers and regular consultations between parents and teachers help support the child's individual development.

Lobdeburgschule, Jena, Thuringia, Germany integrates primary and comprehensive secondary-age learners from age 6 to 17. The first years are mixed-age groups to allow for a flexible transition between grades depending on learners' abilities. From the 4th grade onward, learners work in grade-level classes on interdisciplinary projects that often last around two months. The learning day is organised into phases of autonomous completion of tasks and free creative work, interdisciplinary lessons and projects, professional lessons, and electives in areas of special interest. A key feature of Lobdeburg is the systematic development of methodological competencies like scientific literacy, mind maps, creative play and learning how to learn. Teachers work in grade teams and strongly focus on differential, formative feedback.

Lok Sin Tong Leung Wong Wai Fong Memorial School, Hong Kong, China is for learners aged 6 to 12 in an area of socio-economic disadvantage. It follows the pedagogy of "invitational education" (i.e. practice based on respect, trust, optimism and intentionality), which is realised in small class environments. It places significant emphasis on ICT: teachers, learners and parents share materials with an "electric schoolbag", and a distance-learning classroom is used for joint projects with other schools. The garden and library are the responsibility of the young people. Every classroom has a mini performing stage and a reading corner; books are also spread all over the school to stimulate children to read after school. The extensive after-school programmes include tutoring and supervised homework sessions as well as artistic and athletics projects. Mixed-age "caring groups" with an attached mentoring teacher meet monthly. The staff regularly attend professional development seminars and engage in collaborative lesson planning, and peer lesson observation.

Dobbantó (Springboard), Hungary is a full-time compensatory programme integrated within regular vocational schools preparing those with unsuccessful educational careers to return to schooling or professional life. The key element is an elaborate support system. Learners work in small groups, and meet at least weekly with a personal mentor

teacher who evaluates their progress and draws up individualised learning plans. There is a large selection of modules to choose from for this purpose. Activities focus both on basic competencies for reintegration in schools, and on groundwork for realistic career planning and improving self-knowledge. There are regular workplace visits and "job shadowing" to facilitate realistic and informed career choices. Learners work in well-equipped, newly renovated classrooms, not in inferior facilities with the stigma of catch-up classes. There is extensive professional support for teachers to successfully implement the programme (e.g. external advisors, regular team meetings within and between participating schools). Dropout rates are low and most learners successfully move on to further education or work upon completion. Dobbantó has informed Hungarian education policy on bridging the social gaps among students.

Mevo'ot Hanegev, Kibbutz Shoval, Israel is for learners aged 13-18 and it is an officially recognised model school. It has a shorter school week (5 days) and longer lessons (60 minutes) than is customary in Israel, to allow for deeper engagement. There is an emphasis on project-based learning on self-chosen questions within extensive study units on basic themes and learners demonstrate their learning through so-called "Performances Understanding". All teachers have time put aside for personal and team preparation, and they and external specialists serve as pedagogical mentors. To create close teacher-learner relationships, the number of learners that a teacher meets each week has been halved (from 120 to 60). There is also extensive use of ICT, with a laptop for each teacher and learner and an online learning management system ("virtual campus") through which teachers and learners communicate and store learning products and content. Mevo'ot Hanegev emphasises environmental education, democratic values, and diversity of cultures and identities.

Makor Chaim (Life source), Yeshiva High School, Israel is a boys-only boarding high school (age 15-19), which is selective and based on criteria such as self-awareness and learner autonomy. There is high demand for admission. It is part of an educational centre operating in three circles: at the heart of the inner circle is the school; the intermediate circle comprises a Teacher Education and Rabbi-Teacher Education Programme; and a study hall for the general public constitutes the outer circle. There are full-day secular and religious studies, focused on the learners' meta-cognitive, personal, and interpersonal development. Students are encouraged to take responsibility for their own learning, by choosing subjects and conducting research. They collaboratively study complex, non-linear Jewish texts using the Hevruta method in which learners are challenged to develop their thinking abilities. Each learner has a homeroom teacher who functions as mentor throughout the four years, but who also studies alongside the learners. In addition to a diploma, learners receive a detailed personal assessment from their homeroom teacher every year.

Miwon Elementary School, Gyeonggi-do, Korea is a small elementary school with many learners from disadvantaged socio-economic backgrounds. It introduced multicultural education to meet the needs of its high ratio of learners with multicultural background and lack of language proficiency, and this is highly innovative in this system. Activities in multicultural education are comprehensive and holistic so that learners are provided with experiential learning opportunities, being engaged in a wide range of social, cultural and linguistic experiences as well as cognitive-driven learning experience. Learning hours are extended after class, and learning sites are expanded to various places. Examples of activities are supporting classes and extra language courses for learners with multicultural backgrounds and their parents (also during holidays), and multicultural and Korean culture experiencing days for all learners, after-school classes taught by bilingual

parents, bilingual presentation contests, and artistic projects on multicultural topics, such as learner-produced movies.

Itinerant Pedagogical Advisors Programme, Conafe, Mexico is run by the National Council for the Promotion of Education (Conafe) and focuses on schools with very low performance in highly marginalised small rural communities. Pedagogical Advisors are university graduates in pedagogy or education who alternate between two community schools throughout the school year, providing advice to the community instructors (young people without professional teacher education who teach for a limited period of time in small marginalised rural communities), while also offering individual assistance to learners with low performance, and promoting parent participation in education. The Advisors employ diagnostic instruments to identify learners with special needs, monitor and coach the community instructors, and give recommendations to be followed up by the next instructor. The project began in 2008, and by school year 2010-11, nearly 1 400 schools in 14 states were participating, among them, the **Netzahualcoyotl school, Los Coyotes, Mexico**.

Centros de Desarrollo Infantil del Frente Popular Tierra y Libertad (CENDI), Monterrey, Nuevo León, Mexico is a public early childhood centre (CENDI 4 "Genaro Vaquez") and part of a network of pre-school centres in socially and economically disadvantaged, marginalised areas of Monterrey. Conventional pre-school provision is supplemented by extensive co-curricular activities in language learning, arts, ICT, sustainability, and sports as well as the active integration of the children's family and wider community into the educational activities. Learning is by doing and reflecting, with pedagogy inspired by socio-constructivist theories. Parents and grandparents come in at least once per month to pass on family stories and traditions. The centre actively participates in local festivities as well as family celebrations, and offers a range of community programmes including for pregnant women (about a third of whom are under 18), a women's health programme, parent training on topics like early child stimulation or health and nutritional practices, and a senior club.

Centre for Studies on Design at Monterrey (CEDIM), Nuevo León, Mexico is a design school that offers bachelor level programmes through innovative teaching and educational models that have helped to open the traditional pedagogical paradigm. Learning is largely project-based, giving the learners an active role and responsibility for their learning. The work is organised around authentic real-life problems typically posed by external enterprises or institutions. These are then addressed by teams of learners, guided by their teachers who act as team partners and coaches. Each project takes several months and is integrated into coursework. Different forms of evaluations are used, including peer feedback which is combined with exhibitions of works. The best student work is typically honoured with an award.

Valby Oppvenkstsenter (Early development centre and primary school), Larvik, Norway is an early-development day-care centre and a primary school for learners ranging in age from 1 to 13. Learning is regarded as a comprehensive and continuous process in which children are actively engaged from the earliest stages, and this approach smoothes progression throughout the time at Valby. Learning is organised in groups, which remain constant during parts of the week, but the group size varies according to the children's needs. Teachers regularly spend time with small groups to facilitate interactions. Pedagogy is inspired by social-constructivist ideas and is open to alternative philosophies as judged useful for the children. Professional development is regarded as key. This is often organised by having teachers co-operate with a colleague to do assignments and develop and reflect on good interventions, and then share insights about improved practice with the other colleagues.

Breidablikk School, Sandefjord, Norway is at lower secondary level in which learners can choose among several "paths" covering the regular curriculum. The content may be on, for example, nature and outdoor, media, or music, and the path adopts different learning and teaching styles. The choice of path depends on learners' motivation and interests. Groupings are flexible depending on the paths that the learners choose. The year is divided into six-week periods that focus on a certain topic, and each of these periods includes one week in which learners work intensively on their own interests, following an individual learning plan that they make together with a teacher. There is a special trajectory for learners with maladjustments or drop out problems, who are taught in small groups alternating theoretical and practical work aimed to enhance their motivation and improve their social behaviour, punctuality, etc. The learning environment works on major shared projects like the annual school musical with up to 150 learners and a building project in which groups of learners design their own houses in co-operation with professionals from the business world. Learning spaces include outdoor areas that were in part constructed by learners and teachers.

Internet Classroom, Kkofja Loka Primary School, Slovenia is a virtual learning environment ("e-classroom") within a school to individualise learning, foster creativity and innovation, and to improve the safe and critical use of ICT by learners aged 8 to 15. Learners work individually or in pairs with materials and quizzes that their teachers have designed in order to reach goals determined by the official curriculum. The work with younger learners focuses at computer literacy, whereas older learners increasingly use the digital tools for subject-oriented learning. The work of individual learners becomes visible to teachers – for example, which sources were reviewed and which activities were performed. The e-classrooms are also open to parents to observe activities in progress in individual subjects. Communication tools like chat rooms and forums allow interactions between learners and teachers.

Enrichment Programmes, Rodica Primary School, Slovenia allow additional contents such as artistic pursuits (theatre, journalism, calligraphy, film, music), or research or international, linguistic and social (rhetoric, debate, volunteering, reading) activities to complement the regular school curriculum. This increases learners' motivation and fosters their social skills, learning strategies, independence, and self-confidence. The programme is particularly used as an instrument to stimulate gifted learners. Teachers use alternative forms of assessment, for example, pedagogical dialogues with the learners about their individual progress, and learners present their results and products through performances and exhibitions (e.g. in films). Learning outside the classroom is encouraged (in nature, camps, etc.), as is active learning and interactions with parents and community members.

CEIP Andalucía, Seville, Spain is a pre-primary and primary state school with many gypsy learners and all at risk of social exclusion. The concept of learning community is key in providing quality education and to break the circle of poverty and social exclusion. This is realised through such activities and approaches as the school's own classroom curriculum, based on democratic learner participation and prominent recognition of cultural background; participation of families through volunteering and in so-called "mother's schools"; weekly tutorship; students' representative meetings; the monthly family assembly; and an assessment tool which comprises indicators of achievements and obstacles while also guiding improvements. Strong emphasis is placed on co-operative group work which is organised into activities of 15 to 20 minutes with teams of teachers who switch between groups. Project work in a single class or in a grade or group of different grades aims to overcome curriculum fragmentation and is organised around four stages: planning, searching, organising, assessing.

Instituto Escuela Jacint Verdaguer, Catalonia, Spain is for learners aged 3 to 16, with integrated pre-primary, primary and secondary cycles. Teacher questioning is prominent, and the learning objectives emphasise learner autonomy, responsibility and learning skills, for active inquiry-based learning, co-operative project work on authentic problems, and individual study. Music, drama, yoga, kinesiology and other activities are used to develop self-control, self-expression and social skills. The new organisation of the curriculum is open and arranged into instrumental areas, knowledge areas and expression areas (inner knowledge). The environment has created wide, open learning spaces to facilitate mobility and co-operation among learners and teachers, and makes use of extensive ICT resources, including a virtual learning environment, digital boards, student laptops, and a robotics classroom.

Institut Beatenberg, Bern, Switzerland is a private boarding school for grades 5 to 10 in which many learners arrive after negative prior school experience. It is geared towards independent, goal-oriented learning that recognises prior situations and backgrounds while integrating this into a social framework. Learners work in mixed-age and mixed ability teams, with both individual and group learning. Time units are longer than single lessons and cover subject settings (mathematics, German, French, and English) and "Actives" (for science, arts, creative, manual, and sports interests), with the majority devoted to individualised learning in teams. The last three units of each week are devoted to summing up, reflecting on the activities of the week, presenting results to the community, updating portfolios, and finalising the weekly work plan. Each learning team has access to a large workroom as an open plan space in which to co-operate and engage in peer learning, and each learner has a personal workplace and "home base". The ordinary programme is regularly interrupted by several days devoted to projects and service learning.

REOSCH, Ressourcenorientierte Schule, Bern, Switzerland is a private secondary school in the centre of Bern and runs one class each in grades 7 to 9 and one class in non-compulsory grade 10 intended to ease the transition to upper secondary or vocational training. It is mainly for young people with problematic motivation and achievement. The approach is grounded in sensitivity and awareness training. Resource-oriented pedagogy means discovering and using one's own resources: Mental training, meditation classes, martial arts and outdoor activities are integral components of the curriculum, with a focus on self-perception as a prerequisite for emotional and content learning. Prospective learners decide after a one-day trial whether they want to continue attendance and follow its approach. Learning is individualised with a strong emphasis on self-directed learning supported through weekly plans and journals ("energy diary") and regular evaluation emphasising individual progress more than comparison across learners.

One-room school, Gesamtschule Lindental, Boll, Switzerland is a small one-room state school in a rural municipality, with just one class of learners from grade 1 to 9 with individualised education aiming at integration and autonomous learning. Activities are adapted to learners' current level of development, to challenge gifted learners as well as fostering of self-confidence in weaker learners. There is no grade repetition. Half the lessons are taught by two teachers, sometimes divided into two groups according to age or subject. There are few disciplinary problems, which is attributed to the individualised education and the social dynamics in which younger children learn from the older ones. Activities are inspired by Pestalozzi pedagogy, with much autonomous work based on weekly plans, with autonomy increasing with age. Lessons are linked to an overarching theme each quarter, at the end of which learners present their work to parents.

Chiamale Emozioni (Call them emotions), Locarno, Ticino, Switzerland is a project aiming at the development of socio-emotional skills in young children in kindergarten and the first years of primary school. One main objective is to increase teacher skills in managing and effectively fostering socio-emotional learning. Another objective is to improve the social and relational skills of the children. Various learning activities have been developed to target self-awareness, social awareness, self-management, relational skills, and responsible decision-making. Children are expected to use these skills in establishing and maintaining positive relationships, to be able to recognise the feelings and perspectives expressed by others, and to master communication and apply decision-making skills to deal responsibly with daily academic and social situations.

Obiettivo: comprensione (Target: understanding), Bellinzona, Ticino, Switzerland is a project focussing on vocational schools, with the objective to develop habits of self-evaluation and self-analysis in schools and improve learners' reasoning abilities. Teachers are stimulated to use "Understanding by Design" methodology based around the desired outcomes. The main school involved is the Scuola professionale artigianale e industriale of Mendrisio, where the whole school staff has participated. The "Understanding by Design" method provides learners with opportunities to explain and apply knowledge. The curriculum is developed on the basis of the end goal to be achieved. This strategy is called "backward design", which delays the planning of classroom activities until goals have been clarified and assessments designed. **School Improvement Advisors** are introduced as new figures in the school domain, acting as consultants, critical friends, and academic researchers. The aim is to extend the project through co-operative networks.

Annex B

The Innovative Learning Environments "Universe" and the case study protocols in brief

Having launched the "Learning Research" strand of the ILE (Innovative Learning Environments) project, we began work on the "Innovative Cases" strand. This resulted in the design of a reporting template for learning environments which was either used by the system co-ordinators in each participating system, or by individuals who completed the information and submitted their case separately. This is contained in the first section, next.

Having compiled in excess of 100 cases for the ILE "Universe" in this way, a selection was made from within them to provide a set of more detailed and analytical case studies that differed in kind as well as in analytic detail from the self-report information provided in the original submission to the OECD project. The protocol used to guide this research work is included in the second section of this annex.

The "Universe" template

The template contains an introduction to the project, how the information will be used, the definition of "innovative learning environment" being used in the project and a standard front page for recording the submission of the information. The completed templates are typically 5-10 pages in length.

1. **Rationale**: Why is this ILE so worthy of international attention? How does it respond to 21st century learning challenges? Please tell us about how/why this case is innovative in its own context.
2. **Background**: Who initiated it? When? For what reasons was it started and with what purpose? Have these changed since?
3. **Learning Aims / Intended Learning Outcomes of the ILE**: What are the core learning aims and which knowledge, skills or attitudes are to be acquired by learners? What curriculum is used?
4. **Learners**: Which group(s) of learners is it aiming at? Who is eligible to take part? How many learners are there and in what age range? Are they in the same place or are some participating at a distance?
5. **Teachers/Facilitators**: Who are the teachers/facilitators? Who are the leaders? What are their professional backgrounds? What are their roles? Are they involved at a distance as well as face-to-face? Are families and communities involved in teaching/facilitating?
6. **Facilities, Resources and Technologies**: How are resources used for learning? How are technology and digital resources used? Are families/communities used as

a resource? What does the physical learning environment look like and are there particular uses of learning space?

7. **Organisation of Learning in the ILE**: How is learning organised – over a typical learning day, week or longer? How do learners and teachers/facilitators interact? With what kinds of pedagogies and in what mix? How are learners grouped? What sequencing of learning activities? What assessment strategies and forms of feedback are used?
8. **Learning Context**: In which social and cultural contexts does learning take place? Are parents or community resources involved in the learning? Does the social and cultural context importantly shape the content of the learning?
9. **Funding of the ILE**: How is it funded now? Are there specific plans to change the funding?
10. **Evidence on Outcomes – Cognitive and Non-cognitive**: Is there information regarding the learning outcomes achieved, including academic, social, interpersonal and meta-cognitive outcomes – what does this information show? What about motivation and learner engagement?
11. **Documentation describing or evaluating the ILE**: Is there documentation on this learning environment? Is there a website? Films? Are there research reports or evaluations that provide evidence on impact and effectiveness? Other forms of documentation or information?

The "Inventory" case study protocol in brief

The participating systems in the ILE project were all asked to facilitate and fund at least one case study for the Inventory of innovative learning environments. Most of them were able to meet this request, and indeed many surpassed this basic request by supplying two or more case studies. This section summarises in brief the common framework used. This specified that the work should be carried out by researchers qualified to the doctoral or masters level, under the supervision of the national or regional team. These case studies were requested to be approximately 15-20 pages in length, and they could also include links to more extensive web-based material or additional annexes.

Structure of the case studies

The case studies conducted for the Inventory of innovative learning environments address the following four key areas.

A. The **aims of the ILE and the nature and history of the innovation**, including relevant details on socio-cultural context and population served, broad approach taken, origins and development, age of learners, and situation within the broader educational system.

B. The **structured patterns and characteristics of the learning environment**: the way that learning is organised and structured, including over time. These structures include such matters as how learners are grouped, use of teachers/facilitators, particular combinations of knowledge and content, pedagogies and sequencing of learning, assessments; and the use made of facilities and space, technologies, and community resources.

C. The **nature and quality of the learning** taking place in classrooms, workshops, laboratories, and in the non-formal and other settings. Given the brief nature of the research visit, direct observation will necessarily be limited only to particular occasions judged most illustrative of the distinctive approach of the ILE so that insights on this will need to be inferred from the other sources of information and methods.

D. The **impact and effectiveness of the ILE**: compiling the documentary and other research evidence as it exists on such outcomes as those conventionally used in education (achievement and attainment levels, drop-out, graduation, etc.), those specific to the ILE's own aims and philosophy, attitudinal and motivational indicators, and the so-called 21st century competences.

The case studies used a mix of methods. Some methods are especially appropriate for particular core elements of the case study but potentially may be relevant for all of them. Primarily, the methods will include:

1. Document review.
2. Interviews with leaders and facilitators.
3. Observations of learning and resources.
4. Interviews and focus groups with learners.
5. Interviews with other stakeholders.

Table B.1 combines the case study components, on the one hand, and methods, on the other, to indicate how they relate in practice. While all the methods may shed light on any element of the study we expect that some will be particularly appropriate to some elements rather than others.

Table B.1. **Structured case study components**

		A	B	C	D
		ILE Aims & History	ILE Patterned Features	Nature of Learning	Impact & Effectiveness
METHODS	1. Document review	XX	XX	x	XX
	2. Interviews with leaders & facilitators	XX	XX	X	X
	3. Observations of learning & resources	X	XX	XX	X
	4. Interviews/ focus groups with learners	x	X	XX	XX
	5. I nterviews with other stakeholders	XX	X	x	X

Source: OECD (2012), "The Inventory Case Studies: Structure, Methods, Questions & Guidelines", www.oecd.org/edu/ceri/49040598.pdf (accessed 1 July 2013).

The full protocol document contains the detailed questions to guide the research visits and write-up.

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Educational Research and Innovation

Innovative Learning Environments

How to design a powerful learning environment so that learners can thrive in the 21st century? OECD's Innovative Learning Environments (ILE) is an ambitious international study that responds to this challenging question. The study earlier released the influential publication *The Nature of Learning: Using Research to Inspire Practice*. This companion volume is based on 40 in-depth case studies of powerful 21st century learning environments that have taken the innovation journey.

Innovative Learning Environments presents a wealth of international material and features a new framework for understanding these learning environments, organised into eight chapters. Richly illustrated by the many local examples, it argues that a contemporary learning environment should:

- Innovate the elements and dynamics of its "pedagogical core".
- Become a "formative organisation" through strong design strategies with corresponding learning leadership, evaluation and feedback.
- Open up to partnerships to grow social and professional capital, and to sustain renewal and dynamism.
- Promote 21st century effectiveness through the application of the ILE learning principles.

In conclusion it offers pointers to how this can be achieved, including the role of technology, networking, and changing organisational cultures. This report will prove to be an invaluable resource for all those interested in schooling. It will be of particular interest to teachers, education leaders, parents, teacher educators, advisors and decision-makers, as well as the research community.

"Much has been written about learning environments, and about innovation but nowhere will you find such a deep and cogent portrayal of the key principles as in the OECD's report, *Innovative Learning Environments*. Learners, pedagogical core, learning environments, partnerships, sustainability – it's all captured in this remarkable volume."
(Michael Fullan, OC, *Professor Emeritus, OISE, University of Toronto*)

"Everyone in education is talking about innovation. What is different here is that the best of what we know about learning is at the centre and is richly illustrated with real cases to answer the question, 'What will this look like?'"
(Helen Timperley, *Professor, Faculty of Education, University of Auckland*)

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