



Improving Education in Mexico

A STATE-LEVEL PERSPECTIVE FROM PUEBLA



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Foreword

A high-quality education system in which any child can succeed is the cornerstone for sustained economic growth and social cohesion. Remarkable progress has been made in Puebla in recent years to expand access to education and improve education outcomes. Between 2003 and 2009, the mean performance of 15 year-olds in PISA rose by the equivalent of almost one full year of formal schooling, which is significantly more than the national increase. Puebla ranked eighth of the 32 states and above the national average on performance, a significant achievement considering it is one of the least socio-economically advantaged.

This progress needs to be sustained and further improved. From an international perspective, in Puebla and in Mexico more generally, the performance of 15 year-olds in PISA is weak, with far too many students failing to achieve a minimum and only a small proportion of high performing students. Only three out of four students entering primary school complete lower secondary education and around half finish upper secondary education. Moreover, students from socio-economically disadvantaged backgrounds are almost four times less likely to enrol on time in upper secondary education than those from advantaged backgrounds, and the chances of indigenous students are even smaller.

The report *Improving education in Mexico: a state-level perspective from Puebla* is the result of OECD collaboration with the Government of Puebla which aims to pave the way for the realisation of the Puebla Education Model, an approach which should not only drive internal improvement but may also inspire other state and national reform efforts. Drawing on the experience of high performers and successful reformers in education, and in the light of available research, it assesses the basic and upper secondary education system and provides specific recommendations for improvement. While the report brings an international perspective, particular attention has been paid to building upon policy initiatives that are already underway, as well as considering constraints and potential levers to making reform happen.

While the OECD has already carried out extensive work on the Mexican education system, in particular under the 2008-2010 OECD-Mexico Agreement to improve quality and equity, this report is the first that focuses on basic and upper secondary education in one state. This Report therefore provides a new perspective on how to raise education outcomes. It examines the potential for improvement at the state level given the constraints and complexities of the federal governance system and highlights areas of opportunity. The report, which draws on a background report prepared in a collaborative effort between the Secretariat of Public Education and Proyecto Educativo SC, provides an overall assessment of the basic and upper secondary system, including the main features, challenges and recent developments. It highlights the need for a long-term strategy that maps out a road to reform, and the governance structures that can support improvement. The report recommends that four main areas should be given priority:

- Strengthening support to schools and students, particularly in multi-grade schools, and increasing the emphasis on learning of evaluation and assessment;
- Improving the quality of teachers and school leaders, including raising the quality of the *Normales*;
- Broadening access to and enhancing the quality of upper secondary education, particularly in *Bachilleratos Generales*; and,
- Improving the planning, funding and use of school infrastructure.

At a time when President Peña Nieto is taking bold steps to develop high-quality education to serve the needs of future generations, I hope that this report will help Puebla and serve as an example to other states, as well as other countries, in building education systems that propel young people into a brighter future.

Angel Gurría
Secretary-General, OECD

Preface

The State of Puebla is honoured to have received the support of the Organisation for Economic Cooperation and Development (OECD) in our efforts to fundamentally improve our state educational system. For the first time, a Mexican state has been enriched with tailored recommendations and knowledge in basic and upper secondary education, which are keys to social and economic development, by an OECD team of international experts.

Improving Education in Mexico: a state-level perspective from Puebla represents an invaluable reference to improve education policies as it provides a rigorous assessment and recommendations in issues of key importance for the state. With the right combination of insights from high performing countries and consideration of local constraints and opportunities, the report provides a framework of measures that will provide a better learning experience to all students; strengthen teachers' initial training, selection, appraisal and professional development; improve the planning of school infrastructure; and consolidate our upper secondary supply.

The report is very timely. After two years in office, we see this as a great opportunity to evaluate the actions that already been taken, to modify what needs to be corrected, and to reinforce programmes with proven success. Moreover, the OECD report will complement other strategic documents, such as the *Plan Estatal de Desarrollo* 2011-2017 and the *Programa Sectorial de Educación* in alignment with the national ones. Together these strategic plans will enable drawing up a twenty-years' Great Vision Plan.

The participation in the review process itself has already been very beneficial for all those involved in the review visit and the preparation of a background report. The OECD team visited Puebla to discuss with leaders and high-level officials of the Secretary for Public Education and also interviewed officials of the federal government; visited several schools with different performance, socio-economic composition and physical condition; consulted a wide range of reports and documentation; and held conversations with teachers, school leaders, supervisors, parents, researchers, and representatives from the teachers' union, the civil society and the private sector.

We are very grateful to the OECD, especially to the Directorate for Education and Skills, the experts who participated in this study, and the Secretary-General Angel Gurría for their commitment and support. Our responsibility now is to take full advantage of this report to offer the best possible education to the students in Puebla as well as to share the findings with the federal government and other states in order to foster improvement in Mexico. In the future, we will certainly recognise this report as a key document that contributed to make Puebla a better place to live, study, work, visit and invest.

Rafael Moreno Valle
Governor, state of Puebla

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The author team acknowledges the support from Angel Gurriá, Secretary-General of the OECD, and Gabriela Ramos, Chief of Staff and Sherpa to the G20. Also, the team is very grateful to Barbara Ischinger, Director of Education and Skills, Andreas Schleicher, Deputy Director, and especially Richard Yelland, Head of the Policy Advice and Implementation Division. Within the OECD Secretariat, Francisco Benavides was the project leader, main coordinator of the report, and co-author of Chapters 2 and 3. Anna Pons co-ordinated the report, authored Chapter 1 and 4, and co-authored Chapter 5. The external experts Isobel McGregor, Inés Aguerrondo, and Alastair Blyth co-authored Chapters 2, 3 and 5 respectively. Óscar Valiente participated in the Review visit and provided valuable input to Chapter 4. Silvia Ojeda also enriched the report with valuable input on Mexican education reforms. From OECD Secretariat, Marco Kools, Hyo Jeong Yee and Juliana Zapata provided key support in the final stages of this report. Beatriz Pont and Paulo Santiago provided constant guidance throughout the project. Yuri Belfali supervised the publication process, Rachel Linden provided key administrative, editorial and layout support, and Marilyn Achiron and Elisabeth Villoutreix also contributed to the editing. We are also grateful to other colleagues in the Directorate for Education and Skills, the Economics Department and the Directorate for Public Governance and Territorial Development for engaging in fruitful discussions.

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List of acronyms and abbreviations

ACARA	Australian Curriculum Assessment and Reporting Authority
ACE	<i>Alianza para la Calidad de la Educación</i> Alliance for Quality in Education
AITSL	Australian Institute for Teaching and School Leadership
ATP	Asesores Técnico-pedagógicos Pedagogical assistants
AUD	Australian Dollars
BUAP	<i>Benemérita Universidad Autónoma de Puebla</i> Benemérita Autonomous University of Puebla
CAPCEE	<i>Comité Administrador Poblano para la Construcción de Espacios Educativos</i> Administrative Council of Puebla for Educational Building
CBTIS	<i>Centro de Bachillerato Tecnológico Industrial y de Servicios</i> Centre of Industrial Technology and Services Upper Secondary
CECYTE	<i>Centro de Estudios Científicos Tecnológicos</i> School of Scientific and Technological Studies
CEEP	<i>Consejo de Educación del Estado de Puebla</i> Council of Education of the State of Puebla
CEPAL	<i>La Sede Subregional de la Comisión Económica para América Latina y el Caribe</i> The Economic Commission for Latin America (ECLA)
CEPPEMS	<i>Consejo Estatal para la Planeación y la Programación de la Educación Media Superior</i> State Council for Planning and Programming Upper Secondary Education
CIEES	<i>Comités Interestatales de Evaluación de Educación Superior</i> Interstate Committees of Higher Education Assessment
CIS	<i>Centros Integrales de Servicios</i> Multi-Service Centers
CM	<i>Carrera Magisterial</i> Teacher Career
COBAEP	<i>Colegio de Bachilleres de Puebla</i>
CONAEDU	<i>Consejo Nacional de Autoridades Educativas</i> National Council of Educational Authorities
CONAGO	<i>Conferencia Nacional de Gobernadores</i> National Governors' Conference
CONALEP	<i>Colegio Nacional de Educación Profesional Técnica</i> The National College of Technical Professional Education
CONAPASE	<i>Consejos Escolares de Participación Social en la Educación</i> <i>School Councils for Social Inclusion in Education</i>
CONEVAL	<i>Consejo Nacional de Evaluación de la Política de Desarrollo Social</i> <i>National Council for the Evaluation of Social development policy</i>

COPEEMS	<i>Consejo para la Evaluación de la Educación del Tipo Medio Superior</i> The Council for the Evaluation of Upper Secondary Education
CORDE	<i>Coordinación Regional de Desarrollo Educativo</i> Regional Coordination for Education Development
CPA	Civil Protection Agency
DGETA	<i>Dirección General de Educación Tecnológica Agropecuaria</i> Director General for Agricultural Technology
DGPPP	<i>Dirección General de Planeación y Programación Presupuestal</i> General Direction of Budget Planning and Programming
DGTI	<i>Dirección General de Educación Tecnológica Industria</i> Director General for Industrial and Technical Education
EIMLE	<i>Estrategia Integral para la Mejora del Logro Educativo</i> Integral Strategy to Improve Education Achievement
ENADEMS	<i>Encuesta Nacional de Deserción de la Educación Media Superior</i> National Dropout Survey of Upper Secondary Education
ENLACE	<i>Examen Nacional de Logro Académico en Centros Escolares</i> National Exam of Academic Achievement in Schools
ENAMS	<i>Exámenes Nacionales para la Actualización de los Maestros en Servicio</i> National Exams for the Development of In-service Teachers
ESA	Education Services Australia
EUR	Euros
FAEB	<i>Fondo de Aportaciones para la Educación Básica y Normal</i> Contributions Fund for Basic and Normal Education
FAM	<i>Fondo de Aportaciones Múltiples para Educación Básica</i> Multiple Contributions Fund
GDP	Gross Domestic Product
GTCS	General Teaching Council for Scotland
HDT	<i>Habilidades Digitales para Todos</i> Digital Skills for All
IBE	International Bureau of Education
ICT	Information and Communication Technology
IFIIE	<i>Instituto de Formación del Profesorado, Investigación e Innovación Educativa</i> Institute for Teacher Training and Educational Research and Innovation
INEE	<i>Instituto Nacional para la Evaluación de la Educación</i> National Institute for Educational Assessment and Evaluation
INIFED	<i>Instituto Nacional de la Infraestructura Física Educativa</i> National Institute for Physical Infrastructure for Education
INEGI	<i>Instituto Nacional de Estadística y Geografía</i> National Statistics and Geography Institute
IPES	<i>Indicateurs de pilotage des établissements du secondaire</i>
ITE	Initial Teacher Education
LEA	Local Education Authority, United Kingdom
MECE-Rural	<i>Programa de Mejoramiento de la Calidad y Equidad de la Educación Básica Rural</i> Programme for Improving Quality and Equity in Basic Education in Rural Areas
MLEs	Modern learning environments
MXN	Mexican Pesos
OECD	Organisation for Economic Co-operation and Development
PEC	<i>Programa Escuelas de Calidad</i> Schools Quality Programme

PEFEN	<i>Plan Estatal de Fortalecimiento de la Educación Normal</i> State Plan for Strengthening Teacher Colleges
PEMLE	<i>Programa Emergente para la Mejora del Logro Educativo</i> Programme to Improve Academic Achievement
PISA	Programme for International Student Assessment
PNCM	<i>Programa Nacional de Carrera Magisterial</i> National Teacher Career Programme
PROAPEMS	<i>Programa de Becas de Permanencia en la Educación Media Superior</i> Support Programme for Educational Permanence in the Upper Secondary Education
PROFORDEMS	<i>Programa de Formación Docente de Educación Media Superior</i> Programme of Teacher Training in Upper Secondary Education
PROFORDIR	<i>Programa de Formación de Directores</i> Programme for Training School Principals
PROMEP	<i>Programa de Mejoramiento del Profesorado</i> Programme for Faculty Improvement
PROBAPISS	<i>Programa Beca de Apoyo a la Práctica Intensiva y al Servicio Social para Estudiantes de Séptimo y Octavo Semestres de Escuelas Normales Públicas</i> The Programme of Scholarships for the Intensive Practice and Social Service
PRONABES	<i>Programa Nacional de Becas para la Educación Superior</i> The National Programme of Scholarships for Higher Education
PSNFCSP	<i>Programa del Sistema Nacional de Formación Continua y Superación Profesional de Maestros de Educación Básica en Servicio</i> National System of Training and Professional Improvement for In-Service Teachers Programme
RIEB	<i>Reforma Integral de la Educación Básica</i> Integral Reform of Basic Education
RIEMS	<i>Reforma Integral de Educación Media Superior</i> Integral Reform of Upper Secondary Education
RMM	<i>Red de Maestros de Maestros, Chile</i> Network Teachers to Teachers, Chile
RNAME	<i>Registro Nacional de Alumnos, Maestros y Escuelas</i> National Students, Teacher and School Registry
SEP	<i>Secretaría de Educación Pública</i> Secretariat of Public Education
SEP-Puebla	<i>Secretaría de Educación Pública del Estado de Puebla</i> Secretariat of Public Education of the state of Puebla
SETEP	<i>Sindicato Estatal de Trabajadores de la Educación de Puebla</i> Union for Education Employees in the state of Puebla
SETEPID	<i>Sindicato Estatal de Trabajadores de la Educación de Puebla Independiente</i> Independent State Union for Education Employees
SIAT	<i>Sistema de Alerta Temprana</i> Early Warning System
SIEES	<i>Sistema Integral de Información Educativa Estatal</i> Integral State Education Information System
SNB	<i>Sistema Nacional de Bachillerato,</i> National System of Upper Secondary Education
SNTE	<i>Sindicato Nacional de Trabajadores de la Educación</i> National Union of Education Workers

TALIS	Teaching and Learning International Survey
TMSP	Teacher Mentor Support Program
UE	Universal Evaluation
UNIDES	<i>Universidad para el Desarrollo</i> University for Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNETE	<i>Unión de Empresarios para la Tecnología en la Educación</i> Association of Businesses for Technology in Education
UPN	<i>Universidad Pedagógica Nacional</i> National Pedagogic University
USD	United States Dollars
VET	Vocational Education and Training
VIT	Victorian Institute of Teaching, Australia

Executive summary

Building the Puebla Education Model

The state of Puebla, located in central Mexico, stands where many top-performers and successful reformers have once stood: at the crossroads of maintaining the status quo or embarking on a profound transformation of its education system. The current government is committed to make a long-lasting difference through a long-term strategy to build the **Puebla Education Model**, which will guide and align the efforts of all the actors in the system, and could inspire other states and federal reform efforts. Reform should focus on four areas: (i) strengthening support for schools and students; (ii) improving the quality of teachers and school leaders; (iii) increasing completion and quality in upper secondary education; and (iv) improving the planning, funding and use of school infrastructure. Moreover, a deep-rooted improvement calls for a more policy-oriented bureaucratic structure in Puebla and a new federal governance system.

Policy priority 1: Strengthening support for schools and students

Puebla has made significant progress in expanding access to basic education and increasing student performance and recent initiatives promise further improvement. Nevertheless, only three out of four students who enter primary are expected to complete lower secondary education on time and only half will finish upper secondary education.

- **Recommendation 1: Provide high-quality and supportive learning experiences for all, particularly focusing on early years and multi-grade schools.** Specific strategies should be developed for multi-grade schools, including greater local adaptation of the curricula. Schools could be encouraged to explore different time and staff arrangements, strengthen individual support for students and promote greater parental engagement.
- **Recommendation 2: Further develop and exploit the potential of early warning systems and the use of assessment for learning.** The information system should be further developed to take greater account of socio-economic conditions, monitor and improve low performing schools, track students throughout their education career and identify and support those at risk early on. This should be complemented by a state-wide policy on assessment to inform and guide students, parents and schools.
- **Recommendation 3: Foster a more efficient distribution and use of resources, particularly in multi-grade schools.** Expert learning teams and schemes to share learning resources could be introduced to reinforce the support and mitigate shortages. Groupings of schools, such as the *Centros Escolares*, could be explored to foster economies of scale and ease transitions. The inventory of programmes should enable a more efficient and equitable distribution of resources.
- **Recommendation 4: Restructure school supervision, support and evaluation systems.** Most supervisors' administrative tasks could be transferred to existing or new professional administrators to enable them to focus on support, improvement and

evaluation of schools. A state-level evaluation agency could facilitate school evaluation and inform policies with a greater consideration of the specific needs of the state.

Policy priority 2: Improving the quality of teachers and school leaders

Teachers, school principals and supervisors are the building blocks of the success of any education system. The recent introduction of universal teacher evaluation, and more competitive procedures for post allocation and placement in schools, will help raise the quality of the education workforce but further measures are needed. The roles and expectations of teachers and education leaders are unclear because common standards have not been implemented and teacher initial and continuous education does not respond to the needs of the state.

- **Recommendation 1: Foster the development and use of standards to clarify the roles and set high expectations for teachers and education leaders.** The state could put forward nationwide standards for teachers, school principals, supervisors and other education leaders, which should be aligned with the support and evaluation system and widely used.
- **Recommendation 2: Adjust the provision and raise the quality of the Normales.** An analysis of the number of teachers needed should result in an adjustment plan to reduce over-provision, select only the best applicants, raise the quality of the faculty and promote research on pedagogical innovation.
- **Recommendation 3: Develop and consolidate a professional development system more responsive to teachers' and schools' needs.** One institution should consolidate all professional development opportunities, which should include a mentoring and probation period for beginners, more school-based training and could have a greater basis on a fully implemented and refined *Evaluación Universal*.
- **Recommendation 4: Better select and prepare current and future school leaders and supervisors.** The selection process should be competitive, commissioned posts should be reviewed and voluntary early retirement schemes could be introduced. New and current leaders should receive specific training.

Policy priority 3: Enhancing the access and raising the quality of upper secondary education

Upper secondary education is now mandatory in Mexico and Puebla has considerably expanded access by creating its own institutions and introducing digital schools. However, weak system-wide leadership and a multiplicity of providers result in inefficiencies and quality concerns, particularly in *Bachilleratos Generales*, where weak student support and high opportunity costs fuel a high dropout rate.

- **Recommendation 1: Improve governance mechanisms to ensure that a coherent and high-quality upper secondary education is accessible to all.** A comprehensive and in-depth analysis of the system should feed an improvement strategy and enable the state to take a stronger leadership role in consolidating the system. The Council for Planning and Programming of Upper Secondary Education (CEPPEMS), higher education institutions and the business sector could have a greater role.
- **Recommendation 2: Raise the quality of upper secondary education, focusing on teachers and Bachilleratos Generales, and increase the relevance of vocational programmes.** In addition to continuing support for incorporation into the National

System of Upper Secondary Education (SNB), the state should progressively raise the quality bar and adopt specific strategies for *Bachilleratos Generales* and teachers. Creating centres of excellence and encouraging quality apprenticeships could strengthen vocational education.

- **Recommendation 3: Promote access to and ensure completion of upper secondary education, particularly among disadvantaged students.** The introduction of early warning systems could facilitate identifying students at risk of dropping out and supporting them with tailored strategies, such as professional counselling; measures to encourage back into education those who have dropped out are needed.

Policy priority 4: Improving the planning, funding and use of school infrastructure

Significant steps have been taken in recent years to improve school infrastructure, including the *Peso-a-Peso* programme and the adoption of new technologies. Demographic change now provides opportunities for optimising the provision of schools. The legacy of poor planning and underfunding in past decades is a lack of basic facilities, poorly-maintained buildings and overcrowded classrooms, and a reliance on parents' associations for supplementary resources.

- **Recommendation 1: Entrust a single body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan.** Assigning the overall responsibility for school infrastructure to one body, either CAPCEE or another institution, can facilitate better planning, delivery and compliance; particularly when developing a long-term infrastructure plan is crucial to meet present and future education needs.
- **Recommendation 2: Secure adequate and equitable funding for schools.** The *Peso-a-Peso* programme should be a function of the fiscal capacity of municipalities rather than matched amounts. Also, a capital expenditure plan and further measures to increase transparency and limit the impact of parental contributions on equity are necessary.
- **Recommendation 3: Ensure that the design and use of the existing or new school infrastructure fosters student learning.** Engaging with users in the construction process, setting minimum quality standards, and encouraging the development of school master plans and sharing of facilities are avenues for making the most of education spaces for learning purposes.

Assessment and recommendations

The state of Puebla, in Mexico, stands where many top-performers and successful reformers in education have stood: at the crossroads of maintaining the status quo or embarking on a profound transformation of its education system. Significant measures have already been put in place to improve quality and equity, but stronger efforts are necessary to create an education model that will not only drive internal improvement but also inspire other states and fuel federal reform efforts.

The current education system: recent improvements need to be sustained

Indicators show scope for further progress

High levels of enrolment have been achieved in primary and lower secondary education, but many students struggle to make progress. For every 10 students who enter primary education, only six (62%) complete basic education nine years later, and four (42%) graduate from upper secondary education on time. Indeed, one in every five students (19%) repeats a year of primary school. While few students dropout from upper secondary education (11%, compared to the national average of 15%), attainment levels are very low in an international perspective. In Puebla, only 35% of 25-34 year-olds have at least completed upper secondary education and 20% of them tertiary education.

National and international assessments show the need to improve the quality of the education system, despite recent improvements in performance. PISA 2009 shows that overall student performance of 15 year-olds is very low (mean score was 433 in Puebla, 425 in Mexico and 493 in OECD), although there have been remarkable improvements in reading since 2003. Far too many students fail to achieve Level 2 or more (35% in Puebla, 40% in Mexico, and 19% in OECD) and the share of top performers is very small (0.3% compared to 0.4% in Mexico and 7.6% in OECD). ENLACE shows improvements in recent years in both Spanish and mathematics at all levels, but also indicates that many students achieve poor results.

Education opportunities and outcomes are strongly related to socio-economic background and location. Students from socio-economically disadvantaged backgrounds are almost four times less likely to enrol on time in upper secondary school than those from advantaged backgrounds. Even if disadvantaged students are enrolled in education, they tend to fall behind their more advantaged peers. Those from indigenous groups are particularly at risk as they face multiple obstacles to succeed at school.

Changing demographics present now a historical opportunity to boost the quality and efficiency of the education system. Despite a rapidly growing school-aged and dispersed population, wide ethnic and linguistic diversity, and sizeable social inequalities, Puebla has made significant progress in recent years. Now, shrinking enrolment in pre-school and primary education can facilitate resource reallocations to improve quality, while the expected increase in upper secondary education can bring about higher efficiencies in the provision. In 2010, 3-17 year-olds represented almost one-third of the population in Puebla, but by 2030 this age group is expected to be reduced to one-fifth.

A complex governance system

The responsibilities of states are mainly operational. In Puebla, the state runs 90% of primary and lower secondary schools and 65% of upper secondary schools, including the appointment and dismissal of teachers and authorisation of private providers. Also, states run the *Normales* and can provide professional development for basic education teachers, create their own specific programmes for schools, develop evaluation activities to complement those organised by the federal SEP and introduce some regional content into the national curriculum. However, within the current administrative structure in Puebla, policy formulation, co-ordination, strategic planning and innovation are limited. To increase the territorial outreach, administrative and legal services have been decentralised to sub-regional offices (CORDES). In an international perspective, municipalities have few responsibilities for education and their role is usually limited to infrastructure issues.

The federal government continues to play a prominent role in education policy by setting the overall strategy and assuring the uniformity and national character of education services across the country. This includes education plans and programmes, wage negotiations, or evaluation and administration of the teacher career and tends to be carried out within a centralised, bureaucratic and vertical approach. In turn, intergovernmental co-ordination mechanisms are weak: CONAEDU functions as a consultation and implementation body between states and the federal government rather than a decision-making one and interstate collaboration and co-ordination on education through CONAGO is limited.

The relationship with key stakeholders in the country is dominated by the SNTE, the major teachers' union, while the influence of other actors is only growing slowly. The SNTE has a strong influence on personnel decisions such as appointments to posts, teachers' tenure, rules on career and working conditions, scholarships and other benefits. There are increasing opportunities for other stakeholders to participate in shaping the education system and Puebla is one of the states with the highest number of social participation councils at the school level but these remain few in an international perspective. Students and parents in Mexico, and Puebla, tend to believe that success does not depend on their own efforts and to be less involved in providing learning support respectively.

The complexity of the governance structure is mirrored in the distribution of financial resources and insufficient public expenditures particularly hinder disadvantaged students and schools. The national government provides the lion's share of expenditures on education (79%), which are mainly distributed through earmarked transfers. Education forms the largest share of the federal budget and has increased in recent years, but spending per student is still small by international standards. Expenditures do not focus on the early years, which exacerbates inequalities as students from low socio-economic backgrounds are less likely to enrol into tertiary education, and most spending is allocated to staff compensation (92%, compared to OECD average of 78%) while capital outlays are negligible (2.6% in primary, compared to 9.1% in OECD). The allocation of resources to schools bears little relationship to their level of disadvantage and a large part of the funding is distributed through programmes. Many of the smallest and poorest schools lack the administrative capacity to apply for funding and face difficulties in fundraising from parents and the municipality, which exacerbates disparities between schools.

Recent initiatives in Puebla are laying the groundwork for establishing a much more evidence-based approach to policy formulation than has previously been the norm in Mexico and many individual states. However, there is no state-wide school evaluation to

inform educational policy priorities and the allocation resources to areas of greatest need or impact, which might distort and reduce the impact of public intervention. Moreover, student tests results provide only limited information about schools' performance and few mechanisms exist to effectively evaluate the overall quality of school provision and the value-added provided.

A greater focus can be placed on schools and student learning

With 1.88 million students across all levels in 2010, representing a 21% increase over enrolments in 2000, the Puebla education system is sizeable. The number of 5-14 year-olds is twice that in Finland, similar to that in Belgium and Portugal, and half that in Chile. In compulsory schooling, which spans from basic education (pre-school, 3-5 years-old; primary, 6-11 year-olds; lower secondary, 12-14 year-olds) to upper secondary education (15-17 year-olds), 58 917 teachers and 6 591 school principals serve 11 575 schools in basic education and 15 667 teachers serve 1 441 upper secondary schools. While students are not separated into different pathways (academic or vocational) until upper secondary education, throughout primary and lower secondary education there are different modalities of schooling to respond better to the state's diverse linguistic and cultural needs, remote locations and migrant groups.

Almost half of the primary schools (44%) in Puebla are multigrado: students from different education levels are taught together in the same classroom. While these were created as a temporary solution to increase coverage in rural and isolated areas, they offer limited quality and scarce peer and external support structures for teachers. In urban areas, Puebla pioneered the creation of 32 *Centros Escolares* in which multiple education levels coexist in the same campus under a conglomerate of schools. However, mechanisms to smooth the transitions between education levels still need to be developed.

Schools operate under challenging conditions. Schools have little autonomy, and they operate within a rigid and hierarchical system in which education policy is often characterised by isolated actions, with no planning and co-ordination between them. The schools are overburdened with growing administrative tasks. School support strategies tend to be fragmented, of varied quality, and are poorly co-ordinated and integrated. School principals do not hire or remove teachers and have little say in teacher appraisal, teacher training, or granting incentives and career rewards. In addition, schools do not have autonomy over curricula or learning materials. School budgets are limited and highly dependent on the ability of school leaders to participate in programmes, (140 according to a state inventory) and, in practice schools largely rely on parents' donations. A school evaluation system, in the internationally accepted definition, has not yet been established and the current approach to school evaluation does not focus adequately on improvement of student outcomes, overall achievements and learning experiences.

Effective learning time is short. Half-day schooling is dominant (only 85 schools in Puebla participate in the Full-Time School Programme), few students attend out-of-school programmes and many participate in domestic or paid work. In double shift schools, the afternoon shift tends to concentrate higher proportions of disadvantaged students. While the compulsory instruction time is above the OECD average, 70% of school principals in Mexico report high rates of absenteeism, late arrival of teachers, and a lack of pedagogic preparation as factors that hinder instruction and reduce the quality of teaching.

Despite the aims of the RIEB in broadening the curriculum, the way in which current testing, assessment practices and outcomes are used inevitably tends to result in

narrowing the curriculum and teaching approaches. There is an under-emphasis on formative assessment, project-based learning and other activities (e.g., music, sports, arts, entrepreneurship) and limited teacher training on them. Also, the curriculum has little, if any, local focus. However, although the Reform of Basic Education is in its very early stages, teachers and school leaders are demonstrating a shift in thinking, looking critically at the types of tasks they set for pupils and moving towards a more problem-solving approach.

The creation of a broad and comprehensive set of assessment principles for student learning is at rather an early stage. A formalised assessment system of student performance has been introduced with national tests and a system of bi-monthly testing. There is a danger that ENLACE tests might be used in ways for which they were not originally designed leading to unintended consequences (i.e., teaching to the test). Considerable work has yet to be undertaken to make them more valid and reliable to ensure that benchmarking is not misleading (i.e. accounting for socio-economic and other relevant factors) as well as broad enough to reflect wider student learning and to be meaningful for all students. The bi-monthly student testing system encourages a very limited perception of performance, might be manipulated by teachers to inflate results, provides little understanding of the meaning of the numerical mark and leaves little room for more formative approaches.

Important progress has been made in the development of information systems. In Puebla, a management information system is underway with over 80% of the public schools from pre-school to upper secondary already covered. It will enable to track individual students through the different stages of their schooling and increase the information available about schools (i.e. number of classrooms, laboratories, types of buildings, age and utilities services). At the national level, recent reforms provide for the creation of a census of schools, teachers and students that can reduce the current data inaccuracies.

The quality of teachers and school leaders can be further improved

The national education system still lacks a reliable and widely accepted framework defining standards for the teaching and school leadership professions, which means that there is no clarity on what teachers and education leaders are expected to know and be able to do. This hinders the potential impact of training, support and appraisal mechanisms. In spite of this, there have been several attempts to introduce teacher standards at the national level. In Puebla, a recent survey revealed that many superintendents and supervisors follow different criteria and the state is currently developing a guide to clarify their tasks.

While enrolment in initial teacher education declined by 33% between 2000 and 2010, there is an over-provision with 11 public and 20 private Normales. Puebla is still the state with the highest number of initial teacher education students; for example, the state of Mexico has 25% fewer students despite a population which is 2.6 times larger. Upon completion of upper secondary education, individuals can enrol in the four-year initial teacher education programme required for obtaining a permanent teacher post in basic education.

The quality of Normales varies greatly. There are no clear rules for the appointment of the faculty, which is under the responsibility of the state. Almost half of the staff is on a per class-period basis and only 21% of them hold more than a *licenciatura*. Normales conduct little research and are weakly connected to schools and other academic or

research institutions. In recent years, several initiatives have been introduced to raise its quality, such as the PEFEN and scholarship programmes for students and faculty members. Also, public *Normales* have recently undergone accreditation processes, which have not included pedagogical aspects, and their programmes have been assessed showing varied but poor results in the overall. The participation of private *Normales* in these processes has been limited.

The teaching profession does not attract the best candidates and recruitment is neither always competitive nor solely based on performance. While top-performing systems recruit their teachers from the top third of each graduates' cohort (top 5% in South Korea, 10% in Finland and 30% in Singapore and Japan), it was only in 2008 that Mexico created the Teaching Post Competition. The nationwide competition is limited to *newly-created* permanent teaching posts, although in Puebla and other states it was decided to include vacancies as well. In 2012, only 84 full-time teaching posts and 217 teaching hours for basic education were open for competition in Puebla. In spite of this, important steps have been taken at the national level recently towards a greater professionalisation of the teaching profession.

Teachers often do not receive enough support and recognition for their tasks. Training and placement in schools is not entirely based on a matching of needs and competences, school leaders provide teachers with little support to improve their practices and student-teacher ratios are high. This particularly hinders new teachers, who also are not subject to induction and probation periods. Many teachers work in very remote or small schools and have few opportunities for teamwork and peer learning. Poor labour conditions also hamper their professionalisation: only 28% of lower secondary teachers in Puebla work full-time, and many have a second job that is often not related to education.

School and education leaders do not receive any specific preparation before they take office and their roles do not focus on educational improvement. The roles of school principals and supervisors are largely administrative, and the latter is also associated with ensuring schools' compliance with regulations. Many of them have been four or even five decades in service and they might not have the knowledge, experience or capacity to support improvement in schools. To improve the preparation of school principals, Puebla has recently decided to roll out the best leadership and management features of the *Programa Escuelas de Calidad* to all schools. The situation of many school leaders is further hampered by the lack of recognition. Since 2000, no new principals, supervisors and other education leaders post have been officially appointed: six out of every ten school principals are on commission, thus their tasks are neither formally nor financially recognised.

There is no consolidated offer of professional development opportunities. Each staff member identifies the training to pursue from a disjointed supply of authorised courses from the federal government, states and others. School-based training for groups of teachers or the entire school staff, networks of teachers, and communities of practice are very incipient. According to TALIS, in Mexico, almost all staff (92%) participate in professional development activities but only half of them consider them to be sufficient and meeting their needs; and, compared to other countries, a much higher proportion of teachers shoulders part of the costs. Indeed, in 2012, the federal government only invested an average of MXN 360 (USD 28) per basic education teacher in training.

Only teachers who are part of the SNTE can opt for two complementary types of promotions, which are decided by a committee in which state authorities and this union are equally represented. Almost one-third of staff benefits from a horizontal promotion

scheme (Carrera Magisterial) which consists of monthly salary bonuses of around 15-25% through five levels and is weakly linked (5%) to their appraisal. Staff might be promoted upwards in the hierarchy (*Escalafón*) (i.e., school principal, supervisor and other leadership positions) on the basis of their academic preparation, attitude, experience, discipline and punctuality. Since overall levels of remuneration are far greater towards the end of their careers, some school leaders and supervisors prefer to stay in service albeit with lower levels of performance.

Until recently only 40% of all national basic education staff were appraised as part of the Carrera Magisterial. However, in 2012, the *Evaluación Universal* was introduced as a mandatory in-service appraisal system for the entire education workforce to be applied every three years. It is intended to serve as a formative and diagnostic appraisal for identifying individual professional development needs but also to inform the national and local supply of courses. The results on student performance, professional preparation and continuous training will be considered for the *Carrera Magisterial*. However, the implementation of *Evaluación Universal* has faced significant opposition from some teacher groups and only a small proportion of teachers took the exam.

Towards more and better upper secondary graduates

Low upper secondary attainment rates stem not only from dropout but also from persistent failure in basic education, which represents a bottleneck for further attainment and illustrates the limits of enhancing access at the expense of quality. While a nationwide reform has recently extended compulsory education to upper secondary, this measure alone is unlikely to increase completion. Moreover, the reform focuses on access rather than on completion or quality, establishes a typical age (15 to 17 years-old) that might exclude the significant proportion of students who have struggled to progress, and does not fully consider its financial implications. An ever-increasing number of students will challenge the capacity of the system but also provides an opportunity for better planning and resourcing.

Upper secondary education in Puebla and Mexico as a whole lacks an effective system-wide leadership and collective vision, which has resulted in a large number of providers and programmes as well as little harmonisation and coherence of the supply. In spite of this, around two-thirds of students and schools in Puebla already follow the new common curricula framework set out by the RIEMS to increase harmonisation. Also, the CEPPEMS has been turned into a discussion forum to address some of the fundamental challenges of public upper secondary education institutions. Links with key stakeholders have been fostered in recent years, including the private sector and universities, but in general remain weak and bilateral.

Bachilleratos Generales cater to half (47%) of upper secondary students and the quality of many of them is of concern both in relation to educational staff and infrastructure. Other providers are relatively small and their quality varies considerably. Indeed, only four upper secondary schools have been certified as fulfilling the requirements to be part of the SNB in Puebla. In 2011, the state introduced the Macali programme to support schools in the process of self-assessment and external evaluation prior to seeking certification for the SNB. In addition, some providers are incoherently spread in the territory, particularly in the case of *Bachilleratos Generales*, which mushroomed at the whim of municipalities rather than on the basis of a solid supply-demand analysis. To increase coverage in rural areas, where service delivery can be more costly, the state has launched the Digital Upper Secondary Schools. The vast majority of

students are enrolled in academically-oriented programmes and Puebla has the lowest proportion of vocational students nationwide (18%).

The challenges in building a high quality workforce of teachers and school leaders are similar to those in basic education. While there is an overall oversupply of teachers, the best candidates are not always recruited and there are teacher shortages in certain subjects (*i.e.*, English, Mathematics). Concerns about a lack of pedagogic skills of teachers, which are grounded on the sole requirement of any tertiary qualification to access the profession, led to the introduction of the PROFORDEMS that has already provided training to 66% of all public upper secondary teachers in Puebla. Poor labour prospects hamper their professionalisation: only 10% of them work full-time and, in contrast to basic education, no career programme has been established yet. All principals in federal schools have been competitively appointed since 2008, but those in *Bachilleratos Generales* are still on commission and thus do not receive a formal or financial recognition for their tasks.

Students receive little support, which can be particularly detrimental for those that are disadvantaged or at risk of dropping out. Students receive limited guidance on the choices available amongst a large number of institutions and programmes. Many students enter upper secondary education without a solid knowledge and skills on which to build and struggle to make progress as most institutions continue to apply stringent rules for retention and progression: grade repetition rates remain very high, with only 72% of students completing this level on time with the majority of students (61%) dropping out in the first year. To close learning gaps and prevent dropouts, some federal providers are starting to implement early warning systems. Since opportunity costs of staying in the education system are high, several scholarship programmes aim to reduce the financial burden for low income students. While a recent national survey revealed that half of those who had dropped out (58%) wanted to continue studying and most of them (67%) would be keen to resume their education, there are no mechanisms to follow and channel them back.

Education infrastructure can further support learning

The unclear division of responsibilities among the multiplicity of bodies involved in planning, funding, delivering and managing infrastructure encourages under-provision and blame-shifting. There is no federal or state-level medium and/or long-term planning for school infrastructure, government actions are isolated and there is little co-ordination between the actors involved, leading to a system that is unresponsive to school needs and is rife with duplications, delays, and poor results. Poor planning partially results from the lack of data on school infrastructure, though important progress has been made by the federal-SEP on data collection in recent years.

Public funding for infrastructure is very small (4% of the overall budget of Puebla), although it has increased in recent years: expenditure in 2011 and 2012 was almost the same as the total expenditure for the previous six years combined. The *Peso-a-Peso* programme, in which the state matches the funding provided by municipalities, is the main state initiative. Municipalities or schools have to engage in a long and cumbersome process to carry out infrastructure projects in which funding is not guaranteed: between 2005 and 2011 only 14% of the requests submitted, or 39% of the eligible requests, were successful. Thus, municipalities or schools might undertake the infrastructure work unilaterally, which can lead to the construction of facilities that do not meet the standards.

Insufficient public funding render voluntary parental contributions for schools essential, either as ‘fees’ (ranging from MXN 200 to over MXN 1 800 per year) or in-kind services (e.g. maintenance, cleaning). According to school principals, in Mexico, the typical student attends a public school where only 49% of school funding comes from government sources and over 41% from parents (compared to the OECD average of 89% and 7% respectively). While regulation and information about parental voluntary contributions to public schools is limited, they exacerbate inequalities between schools and represent a significant burden for families that may influence school choice and, in extreme cases, failure to pay may lead to stigmatisation or exclusion. Puebla has launched some initiatives to inform parents about the voluntary nature of contributions and School Councils of Social Participation have been tasked with financial reporting.

The quality of the physical environment of many schools falls short of international standards and is not fit for learning purposes. In Puebla, most school buildings (55%) were built in the 1980s to meet the rapidly rising demand. Chronic underinvestment in maintenance and upgrading of schools has left many buildings in need of modernisation and many schools do not have sufficient classrooms, or any laboratories, libraries or sports facilities. In the most extreme cases even more basic equipment and services are missing: 15% of schools have no toilets and 28% no electricity and/or running water. Classrooms are typically overcrowded, organised according to a teacher-centric learning model and with furniture that is not easy to reconfigure, which obstructs other learning arrangements such as group working. In addition, learning spaces are generally limited to the classroom with little use of external spaces or sharing of facilities between schools or other organisations. However, acknowledging the opportunities that new technologies can bring, Puebla has made great efforts to increase the number of computers available in schools, expand connectivity and train teachers to use ICTs.

Moving forward: stronger foundations for the Puebla Education Model

Improving Puebla’s education system requires successful reforms in the short and medium term in four main policy priorities: *i)* strengthening support for schools and students, *ii)* improving the quality of teaching and school leadership, *iii)* increasing completion and quality in upper secondary education, and *iv)* improving the planning, funding and use of school infrastructure. These should be embedded in a long-term strategy that also reforms governing structures.

Policy priority 1: *Strengthening schools’ and students’ support*

Recommendation 1: *Provide high-quality and supportive learning experiences for all, particularly focusing on early years and multi-grade schools.* Specific strategies should be developed for multi-grade schools, which could be part of the EIMLE programme and include *i)* providing staff with specific training and instructional materials; *ii)* encouraging innovative instruction methods and curriculum adaptation; *iii)* exploring notions of clusters of schools and sharing of learning and teaching resources; and *iv)* attracting and retaining better teachers and leaders with adequate career and financial incentives. The introduction of the *Escuela Nueva* model could be considered further as evaluations have shown its positive impact. Considering the reform trajectory of Mexico, extending the programme *Escuelas de Tiempo Completo* to all schools might not be as beneficial as raising the quality of instruction through better teacher recruitment and professional development, which has far greater impact on learning outcomes than the number of instruction hours. Extending the learning time could simply lead to the

recruitment of more permanent poorly qualified teachers. In addition, schools could explore different arrangements to make the most of the instruction hours, including flexible staff arrangements, team teaching or project-based assignments. The curriculum taught should not be narrowed down to the subjects tested and curricular topics as well as associated assessments should take account of, and value, the indigenous contexts. Also, out-of-school and summer programmes could be targeted at disadvantaged students. To foster student engagement, schools could be encouraged to design holistic individual support strategies, appoint students' individual tutors, promote students' participation, and strengthen the links with parents.

Recommendation 2: *Further develop and exploit the potential of early warning systems and the use of assessment for learning.* The current information system of Puebla should be further developed to take greater account of socio-economic conditions, track students throughout their education career and facilitate identification of those who require support early on. It could also enable better monitoring, support and accountability of schools. A single system-wide comprehensive information system could be developed, taking into consideration national initiatives and without overburdening schools and their leaders with unnecessary administrative work. A student assessment policy could be elaborated and widely disseminated to provide clearer information for students and parents, guide teachers in using assessment techniques for learning, and discourage the use of grade repetition as a major support strategy. Also, it could encourage rearrangements in schools, such as using selected ATPs as learning support teachers who could support class teachers, replace them during their trainings, and liaise among the different school actors. A well-rounded assessment system should be established with diagnostic tests closely linked to the curriculum in order to identify those who need support, teachers should be trained in the use of formative techniques, particularly in classroom-based practical settings, and the balance between formative and summative assessment could be revisited to enable a greater focus on formative assessments.

Recommendation 3: *Foster a more efficient distribution and use of resources, particularly in schools located in remote areas.* To mitigate the shortages, expert learning teams (with support teachers, specialists, learning auxiliaries, nutritionists, psychologists) and schemes to share learning resources (e.g., mobile libraries) could be introduced for shorter or longer stretches of time according to prioritised need with a focus on the early years and multi-grade schools. A review of the *Centros Escolares* should shed light on whether expansion and improvement of the scheme could be cost-beneficial and other types of school groupings can be explored in remote communities, thus fostering economies of scale and easing of transitions. The state inventory of all the available programmes should, in the short-term, facilitate helping schools to identify those which are most relevant for them and supporting them throughout the application process. In the mid-term, the state should put forward a rationalisation of funding sources, simplification of administrative procedures and improved matching to schools. Eventually, funding through programmes could be replaced by formula funding taking greater account of students' and schools' needs.

Recommendation 4: *Restructure school supervision, support and evaluation systems.* The role of supervisors should be redefined to focus on support, improvement and evaluation of schools. Only the best educationists should be appointed to the post and recruitment procedures should be transparent. Most of their administrative tasks should be transferred to existing or new professional administrators; for example, the CORDES or a new post within schools or groups of schools. Also, school self-evaluation could be

further developed and should be complemented by a system of external school evaluations, which should focus on the school as a whole rather than on individual teachers, thus promoting the notion of joint responsibility for school performance. In addition, an evaluation and assessment agency could be created at the state level to facilitate a more systematic evaluation of individual teachers and schools, provide support to schools in their self-evaluation and internal appraisal activities, inform policies through a better understanding of local needs and conditions and increase accountability.

Policy priority 2: *Improve the quality of teachers and school leaders*

Recommendation 1: *Use standards to clarify the roles of teachers and education leaders and ensure high expectations.* Puebla could encourage the national government to further develop and apply teacher and school leadership standards. These should contain clear-cut definitions of the goals to be achieved in different phases of the career and should be aligned with initial education, professional development, career progression and appraisal systems. Standards should be designed in consultation with key stakeholders in order to foster ownership and in collaboration with respected academics to reduce the risk of politicisation. Further measures will be necessary to embed standards and ensure that these are widely used, including revisions for improvement. In the case of supervisors, the expert group preparing the guide could be commissioned to define their set of competences and tasks with an increased focus on improvement, which could become the pillars of the standards to be developed in the mid-term. Similarly, the state could put forward standards for superintendents, ATPs and other education posts.

Recommendation 2: *Adjust the provision and transform the Escuelas Normales into high-quality initial teacher education institutions.* The state should carry out a study to analyse the supply of initial teacher education per type of position and specialisation in view of its territorial and demographic needs and widely disseminate the findings. The study should also pave the way towards an adjustment plan with strategies to downsize, restructure and transform the *Normales* into specialised centres preparing teachers for specific roles (e.g., *aulas multigrado*, supporting teams, school and education leaders) and to merge or close down those that offer low quality, poor infrastructure or have insufficient resources. Puebla should raise the entry bar into initial teacher education programmes by establishing demanding entrance screening exams and setting a high cut-off score to ensure that candidates have solid knowledge and aptitude for teaching. Ways should be explored to increase the attractiveness of the profession, such as scholarships for high performing upper secondary students or better working conditions. Steps should also be taken to improve the quality of the education delivered by, for example, including pedagogic aspects (e.g., planning, teaching, designing activities, assessment practices) in the CIEES accreditation, which in the longer-term could be the basis for the creation of a *Framework for Effective Teacher Colleges*. Measures should also be taken to raise the quality of the faculty by improving the attractiveness of the career, including reducing the number of part-timers and clarifying the duties of each position, establishing transparent recruitment procedures that focus on relevant skills and expertise, and introducing certification schemes. Finally, *Normales* should carry out research into pedagogic innovations that respond to the needs of the state and promote their introduction in schools.

Recommendation 3: *Develop and consolidate a professional development system more responsive to teachers' and schools' needs.* Throughout their career, teachers should participate in professional development opportunities. A single institution, either a unit

within SEP-Puebla or a new external institution, should systematise, consolidate and co-ordinate all professional development opportunities (national, state-level and others). It should also inform educational staff about the most relevant courses for their specific needs and pre-select and evaluate the supply of training courses. For example, it should promote more school-based professional development opportunities to help teachers develop capacity to team up, including peer learning and support strategies. At the beginning of their career, teachers should receive intensive support, including reduced workload, continuous mentoring and formal instruction. Induction should be complemented by a probation period by the end of which only teachers who demonstrate competence should be granted or be eligible for permanent teaching posts. Some outstanding teachers or ATPs should be trained in issues such as classroom observation, coaching or appraisal to become mentors (for induction) or evaluators (for probation), which could also contribute to their recognition. Since *Evaluación Universal* could inform the needs of individual teachers and the overall supply, the state should encourage its full implementation and further refinement, such as including components other than the results of students in ENLACE.

Recommendation 4: *Better select and prepare current and future school leaders and supervisors.* A competitive and transparent selection system for school principals should be implemented. One option could be to effectively implement the *concurso* proposed in 2008 in consideration of the current federal reform efforts. Another option could be to introduce a selection system based on shortlists of candidates in which an appointment panel would convene when there is a vacancy to consider objectively those who have been qualified as meeting the standards. In addition, Puebla should explore ways to open supervisors and superintendent posts for competition taking into account their potential to raise school performance rather than their capacity as administrators. New and current education leaders should receive specific training both on-the-job and in peer learning activities and networks. For example, Puebla could look into the experiences of other states and could also pioneer the creation of a specialised training institution for education leaders. Supervisors and other support staff should receive mandatory pre-service and in-service training on *i)* educational leadership; *ii)* evidence-based evaluation for improvement at school level; and *iii)* change management. Working conditions also matter and the existence of hundreds of commissioned school leaders hampers the whole profession and may discourage competent aspirants. Puebla should increase transparency in the distribution of posts and implement a plan to regularise those commissioned to leadership positions in coordination with the federation, which could be combined with requirements on certification, appraisal and specific training to ensure their preparedness for the posts. Efficiency gains in the mid-term are likely to off-set the additional financial resources that regularisation might require due to the salary increase. Drawing upon previous national and international experiences, Puebla could encourage earlier and voluntary retirement, which is likely to result in lower expenditures in the mid-term as the current weight of seniority is very high, and allocate senior staff to positions where their experience can be of particular value (*e.g.* mentors, advisors or teacher trainers).

Policy priority 3: Enhancing access and raising the quality of upper secondary education

Recommendation 1: *Improve governance mechanisms to ensure that a coherent and high-quality upper secondary education is accessible to all.* A first step that Puebla should consider is carrying out a comprehensive and in-depth analysis of the system with

a threefold perspective: the demand (e.g., potential enrolment, preferences of students), the supply (e.g., capacity constraints, quality) and the present and forecasted economic and social needs. While the findings should be shared with the CEPPEMS, this diagnosis should be solely undertaken by SEP-Puebla to build capacity and develop a clear vision on the future of the system without the influence of current providers. A second step should be to design a strategy that enables the state to *i)* foster efficiencies in order to meet the financial challenge; *ii)* raise the quality of services and promote a more even territorial distribution; *iii)* spur and scale up innovative and more cost-effective types of provision, which might be the case of such as the *Bachilleratos Digitales*; and *iv)* match the current and future labour market and social demand for skills. A particular focus should be placed on *Bachilleratos Generales* as these cater to half of the upper secondary student population as the quality of many of them is of concern and as they are fully under the state's responsibility. The SEP-Puebla should continue to play a leading role in the CEPPEMS and could explore ways to increase the representativeness and decision-making role of this body. The strategic position of Puebla in higher education should permeate to the upper secondary education level by providing guidance and mentoring, access to facilities and specialist knowledge, smoothing the transition to higher education, and greater involvement in teacher training. Similarly, the business sector could provide VET programmes with more equipment, trainers or workplace learning. In the longer-term, steps should be taken towards a more harmonised supply and efficient administration, which will require exploring ways to ensure a coherent offer of study programmes as well as to stress the differences between providers and reduce their number, and might lead to the creation of a consortium.

Recommendation 2: *Raise the quality of upper secondary education, focusing on teachers and Bachilleratos Generales, and increase the relevance of vocational programmes.* Puebla should strengthen the Macali programme and use feedback loops to further support schools in joining the SNB. Since many *Bachilleratos Generales* are in a poor condition, specific actions are required to improve their quality, including closing or merging them where students can be transferred to nearby institutions. The quality bar should be raised progressively by, for example, setting more demanding criteria than those currently stipulated in the SNB. Quality improvement efforts should focus on teachers by improving the recruitment process, providing them with pedagogical training and introducing a career structure to both appraise and reward them. In addition, sabbaticals or professional leave could be introduced to provide them with exposure to industry and update the skills and knowledge of VET teachers. Similarly, school leaders should be appointed on the basis of a competitive procedure, as in the case of federal institutions, should receive specific training and their posts should be formally and financially recognised. Improving the quality, attractiveness and relevancy of VET programmes is also necessary. In addition to matching the supply of graduates to labour market needs, VET should provide students with the right mix of general academic and vocational skills to be readily employable but also to build strong foundations for the rest of their lives. The state could identify strategic sectors (e.g., automobile industry, agriculture, tourism) and forge alliances with VET institutions, universities and employers to create centres of excellence that can supply skilful graduates and benefit from access to cutting-edge technologies and specialised knowledge. To reap the benefits of workplace learning, the state could introduce quality apprenticeships, which might require removing the existing legal obstacles and increasing the involvement of the business sector.

Recommendation 3: *Promote access to and ensure completion of upper secondary education, particularly among disadvantaged students.* In addition to more flexible pathways in lower secondary education, the state should smooth the transition, raise its relevancy, and ensure that selectivity and fees do not deter students from enrolling into upper secondary education. Raising the compulsory schooling age is not likely to increase attainment in the absence of strategies to support students at risk of dropping out. At the start of upper secondary education, the state should encourage providers to address serious gaps in students' skills, attitudes and knowledge that hinder further progress. Also, the state should foster the introduction of early warning systems, which are already underway in federal institutions, and tailored support strategies. In addition to more and better learning opportunities, increasing the effectiveness of support strategies might require adopting a holistic approach to underperformance, providing financial support and revisiting hurdles to permanence, progression and permeability. A body of professional counsellors could be created to raise educational expectations and provide career guidance, which should be targeted at the transitions between levels as well as disadvantaged and at-risk students. Also, measures to identify and follow up individuals who have dropped out as well as mechanisms to facilitate their return (*e.g.*, recognition of prior education, flexible and diverse pathways) should be introduced. Finally, the state could apply a more flexible interpretation of the age limits to cater to the significant proportion of older students, and expand second-chance programmes and adult learning, which would represent a shift from an initial education perspective to a lifelong learning one.

Policy priority 4: *Improving infrastructure planning and ensuring the quality of facilities*

Recommendation 1: *Entrust a single body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan.* One single body should be entrusted with the lead role or the overall responsibility for school infrastructure, which could be either a new body or an already existing one such as CAPCEE or the Undersecretariat of Planning, Evaluation and Innovation. The core task of this body should be to devise an improvement plan and put forward a clear governance framework in which there are well-defined different roles and procedures. Also, it could review and, where possible, streamline the procedures for approving construction projects, explore ways to increase the enforcement of norms and standards, and provide guidance and technical support to schools and municipalities for meeting them and for making the most of educational spaces. A long-term state-wide school infrastructure master plan in alignment with the education strategy is key to optimising school infrastructure in a period of significant demographic change. To this end, the information system should be further developed with accurate and up-to-date data on the existing facilities and demographic projections. The plan should include clear targets in order to determine the financial impact and enable the prioritisation of funds. The plan should explore mergers, closures, conversions and innovative ways to deliver education services.

Recommendation 2: *Secure adequate and equitable funding for school infrastructure.* The criteria for funding should be revised in order to prioritise support to: *i)* schools in such poor condition that they do not meet minimum learning standards but have future potential (*i.e.* productive life of the building, demographic projection) and *ii)* disadvantaged schools that otherwise might not be able to raise funding. Also, more accurate equity measures should be introduced to provide a better indication of disadvantage. The state's *Peso-a-Peso* programme could provide funding on the basis of

the fiscal capacity of municipalities rather than matched funds, which treat them on an equal rather than equitable basis and hamper the opportunities of low-income ones. In the longer term, the state should develop the capacity to proactively identify and support schools by, for example, using the information system to improve reporting by supervisors. The current demand-driven approach disadvantages schools that lack the capacity to handle the whole application process. More information both on the extent of parental contributions and how the money is spent would facilitate more informed planning, a more efficient and equitable allocation of resources and, accountability, and would enable the state to develop and implement policy measures to limit the negative effects on equity. The state could continue to encourage the reporting of infringements, promote the role of school councils in financial reporting, and explore ways to reduce the effect on school choice, prevent stigmatisation or link fees to income. Finally, addressing chronic underinvestment in infrastructure requires a capital expenditure long-term plan, which should be based on an infrastructure plan and should estimate total expenditure and identify the financial sources to meet them.

Recommendation 3: *Ensure that the design and use of the existing or new school infrastructure fosters student learning.* The procedure for the design and construction of school infrastructure could be revised to identify key stages in which users should be involved to increase the buildings' fitness for learning. Minimum standards and measures to ensure that these are met should ensure a minimum quality environment, which is critical for learning. Considering the extent of changes required, Puebla could develop a vision of how schools should look in the future and pave the way towards its realisation. Taking into account the long-term education and infrastructure plan, school leaders could take the lead in the development of school master plans. This should become a central planning tool rather than an additional bureaucratic requirement. It should cover a period of several years, examine the needs (*i.e.*, rehabilitation, remodelling, furnishing and equipping existing or new spaces), explore how existing buildings can be used in different ways and identify funding sources ahead of time. Making the most of education infrastructure also requires reconsidering how schools can more effectively use their internal and external spaces, and supporting them in acquiring any infrastructure needed. Also, the state could map out and establish incentives to share facilities (*i.e.* laboratories, playgrounds) between schools and continue to create specialised learning centres such as the Planetarium (*i.e.*, museums, universities, science centres or nature parks). Finally, initial education and professional development should enable teachers and school leaders to use spaces more effectively.

A long-term vision of the system and a well-functioning governance system are necessary for successful reforms

These four main policy priorities for improvement should be embedded in a long-term vision of the Puebla Education Model. A **long-term plan** can establish clear goals to guide and align efforts of all the actors of the education system towards educational improvement. It can set out the necessary reforms and build consensus around them, while ensuring that these are coherent with policies and practices across all aspects of the system, sustained over time and consistently implemented.

In addition, the success of the Puebla Education Model will also depend on **a well-functioning governance structure**. To this end, Puebla can take steps towards a more policy-oriented governance structure, which could involve:

- A greater use of diagnosis, planning, innovation and evaluation in policy making.
- A review of the division of responsibilities with the federation to identify reforms that should be launched at the state level and reforms that should be put forward to the federation.
- A reorganisation into a State administrative structure that can spur and scale-up improvements.
- Revising the structures that will deliver the reforms to ensure outreach to individual schools, particularly in remote areas.
- A "whole-of-government" approach can increase effectiveness as education is cross-departmental.
- A more professional relationship with the SNTE, while acknowledging its role in representing the vast majority of teachers, by, for example, providing non-affiliated staff with access to equal career professional opportunities.
- More avenues for engaging with a broad set of stakeholders (*e.g.*, parents, teachers, school leaders, business leaders).

Significant improvements in Puebla will also require changes in the Mexican education system. While the new federal administration has recently set in motion improvement in key areas, changes in the **federal governance system** are also necessary:

- A long-term perspective to provide guidance to other actors and achieve greater coherence in policies.
- A greater role for states in policy design to respond to local needs, constraints and opportunities.
- A clearer distribution of responsibilities that fosters efficiency, responsiveness and accountability.
- Stronger vertical and horizontal intergovernmental mechanisms to facilitate co-ordination and collaboration with the federation and between states.
- A more professional relationship with teachers' unions and more avenues for stakeholder participation to raise educational expectations.
- A clearer and simpler funding system for a more efficient and equitable resource allocation.

Summary of policy priorities, recommendations and strategies for action

Policy priority 1: Strengthening schools and student learning

Recommendation 1: *Provide high-quality and supportive learning experiences for all, particularly focusing on early years and multi-grade schools*

- 1A. Explore additional ways of organising learning time and support multi-grade schools
- 1B. Ensure a relevant curriculum to all students and encourage flexible and innovative ways of learning
- 1C. Foster the development of a holistic strategy to support students in a more structured way in schools
- 1D. Encourage schools to strengthen links with all parents

Recommendation 2: *Further develop and exploit the potential of warning systems and the use of assessments for learning*

- 2A. Foster the development of early warning systems and establish mechanisms to track students throughout their education
- 2B. Introduce a state-wide student assessment policy containing guidelines for teachers and information for students and parents
- 2C. Reinforce teachers' skills on formative assessment techniques and encourage the development of assessments whose frequency and content support learning

Recommendation 3: *Foster a more efficient distribution of resources*

- 3A. Create expert learning teams to support schools, introduce schemes to share learning resources across schools and consider the integration of services
- 3B. Undertake a review of *Centros Escolares* and consider other groupings of schools
- 3C. Rationalise the number of programmes and secure funding for schools, particularly the most disadvantaged ones

Recommendation 4: *Restructure school supervision, support and evaluation systems*

- 4A. Redefine supervisor's tasks to focus on student learning and transfer administrative tasks to existing or new professional administrators
- 4B. Introduce evaluation and reporting on quality at school and local levels
- 4C. Develop a state agency or unit with an evaluation and assessment function

Policy priority 2: Raising the quality of teachers and school leaders

Recommendation 1: *Foster the development and use of standards to clarify the roles and set high expectations for teachers and education leaders*

- 1A. Foster the development and use of standards for teachers and school leaders in alignment with the support and evaluation system
- 1B. Continue to develop a common set of competences for supervisors and other education leaders

Recommendation 2: *Adjust the provision and raise the quality of the Normales*

- 2A. Carry out a study of the supply and demand of teachers to develop an adjustment plan
- 2B. Raise the bar to enter the *Normales* and explore ways to attract better candidates
- 2C. Include pedagogical criteria in the accreditation of *Normales* and introduce measures to raise the quality of the faculty
- 2D. Foster research and promote pedagogical innovation that responds to the specific learning needs of the state

Recommendation 3: *Develop and consolidate a professional development system more responsive to teachers' and schools' needs*

- 3A. Entrust one institution with the responsibility of consolidating professional development opportunities and increase the offer of school-based training
- 3B. Provide beginning teachers with intensive support and mentoring by a new cadre of excellent mentor teachers and establish a probation period
- 3C. Further implement and refine the universal teacher evaluation for professional development

Recommendation 4: *Better select and prepare current and future school leaders and supervisors*

- 4A. Establish a competitive and transparent selection process for school principals

- 4B. Develop specific training and support mechanisms for new and current school leaders, in-service supervisors and other education leaders in line with their new role in promoting learning
- 4C. Regularise commissioned teachers in school principal positions and support voluntary early retirement of education leaders

Policy priority 3: Improving upper secondary education

Recommendation 1: *Improve governance mechanisms to ensure that a coherent, sufficient and high-quality upper secondary education is accessible to all*

- 1A. Strengthen the leadership of the state through an improvement strategy based on a solid analysis
- 1B. Strengthen the CEPPEMS' ability to co-ordinate with all providers and promote further engagement of key stakeholders
- 1C. Make further efforts to harmonise upper secondary education and foster a more efficient administration of the system

Recommendation 2: *Raise the quality of upper secondary education, particularly in Bachilleratos Generales, and increase the relevancy of vocational programmes*

- 2A. Ensure integration into the SNB, particularly in the case of Bachilleratos Generales
- 2B. Focus on improving the quality of teachers and school leaders, particularly in Bachilleratos Generales
- 2C. Make vocational upper secondary programmes more relevant to young people and the labour market, create excellence centres and promote apprenticeships

Recommendation 3: *Promote access to and ensure completion of upper secondary education, particularly focusing on disadvantaged students*

- 3A. Set pathways to ensure completion of lower secondary education and smooth the transition to upper secondary education
- 3B. Design and implement early detection systems and tailored support strategies for students at risk of dropping out
- 3C. Create a body of professional counsellors to raise educational expectations and provide career guidance, particularly in the transitions of the education system and targeted at disadvantaged and at-risk students
- 3D. Follow up on students who have dropped out and facilitate re-entry into the system

Policy priority 4: Improving education infrastructure

Recommendation 1: *Entrust a body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan*

- 1A. Entrust a body with the overall responsibility for school infrastructure in order to improve planning, delivery and enforcement
- 1B. Further develop and use the information system to create a long-term infrastructure plan to meet present and future education needs

Recommendation 2: *Secure adequate and equitable funding for school infrastructure*

- 2A. Prioritise public funding on the basis of the urgency of the infrastructure required and local capacity to fundraise
- 2B. Increase transparency around parental contributions and limit its impact on equity
- 2C. Define capital expenditure needs and explore ways to increase the resources available

Recommendation 3: *Ensure that the existing or new school infrastructure fosters learning*

- 3A. Take into account user needs, and ensure that standards define minimum quality and envision innovative learning environments
- 3B. Support schools in developing master plans and facilitate their implementation
- 3C. Promote better use of internal and external learning spaces, encourage sharing of facilities, and create specialised learning centres

Chapter 1.

Building the Puebla education model

The government of Puebla is committed to undertaking a profound transformation of its education system, just as many top-performers and successful reformers in education have already done, which will result in the Puebla Education Model. Significant improvements in enrolment, performance and completion have been achieved in recent years, but many students struggle to make progress and education opportunities and outcomes remain strongly linked to the socio-economic background of students. States are mainly responsible for the operation of schools within a complex governance system in which the federal government continues to play a prominent role in designing and funding education policies and SNTE has a strong influence on personnel decisions. The learning environment of schools is very challenging and often teachers and school leaders do not receive adequate preparation, support and compensation. Setting in motion reforms in key areas, drafting a long-term strategy and strengthening the capacity for improvement are the keystones to the Puebla Education Model.

1. Puebla stands at a crossroads

Puebla stands where many top-performers and successful reformers in education have stood: at the crossroads of maintaining the status quo or embarking on a profound transformation of its education system. Significant measures have already been put in place to improve quality and equity, but stronger efforts are necessary to create an education model that can inspire other states and fuel federal reform efforts. Despite the challenges ahead, Puebla should not miss this historic opportunity.

The current government, which took office in 2011, has already launched several initiatives in keeping with its commitment to improving education.¹ Among them are efforts to enhance access to and improve the quality of upper secondary education through better institutional co-ordination and innovative digital delivery, making better use of the national student assessment tests, and rewarding the highest-performing students and teachers.

In the current economic downturn, it is more important than ever to continue investing in education as part of a strategy to build a sustainable recovery and foster social and economic development in Puebla. Investing in education pays off, and the benefits accrue not just to individuals, but to societies and economies as a whole. A highly skilled population can provide a competitive advantage in the rapidly changing global market, foster economic growth, increase individual earnings, and reduce income inequality (Hanushek and Wößmann, 2007). Education can also reduce the informal economy by raising the productivity of the labour force, particularly when targeting those with the lowest skills (OECD, 2011a). Moreover, greater equity in education has also been associated with better public health, stronger social cohesion and lower levels of crime (OECD, 2012a).

Recent achievements need to be sustained

While Puebla has made significant progress in reforming its education system in recent years, further improvements are needed in the access, quality, equity and relevance of the education system.

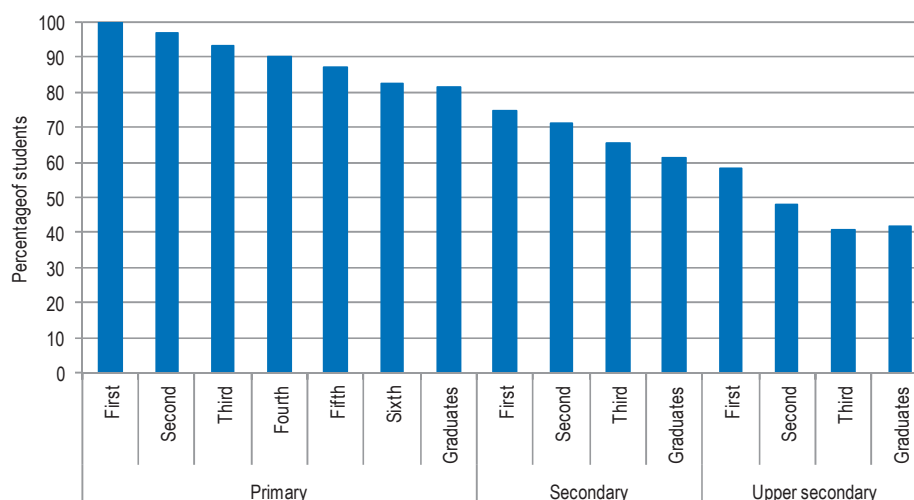
High levels of enrolment have been achieved in primary and lower secondary education, but compared to OECD standards, there are still too many students who drop out well before completing upper secondary education. In Puebla, 25-34 year-olds have spent an average of 9.1 years in formal education, slightly lower than the national average of 9.9 years, but significantly longer than the average of 5.5 years among the 55-64 year-old population (INEE, 2012).² In the school year 2011-12, 84% of 3-5 year-olds in Puebla were enrolled in pre-school (SEP, 2012a).

However, for every 10 students who were enrolled in the first year of primary education in the academic year 1999-2000, only six (62%) completed basic education nine years later (2007-08), and four (42%) graduated from upper secondary education on time (2010-11) (see Figure 1.1).³ About two in every 10 students (19%) who were at the start of primary school did not graduate six years later, mainly because of grade repetition rather than drop out.

The vast majority of students who completed primary education moved on to lower secondary education (92%), but only 82% of them graduated three years later. While almost all students who graduated (95%) continued on to upper secondary education, only 72% of them completed upper secondary school on time.

Figure 1.1. More than half of the students struggle to progress in the education system

Percentage of students enrolled or graduated out of those who were enrolled in the first year of primary education in Puebla (1999-2000 to 2010-11)



Note: This is a raw approximation based on enrolment. There is no information system to track students throughout their education.

Source: Secretaría de Educación Pública (SEP) (2012a), Sexto Informe de Labores 2011-12, SEP, México, D.F.

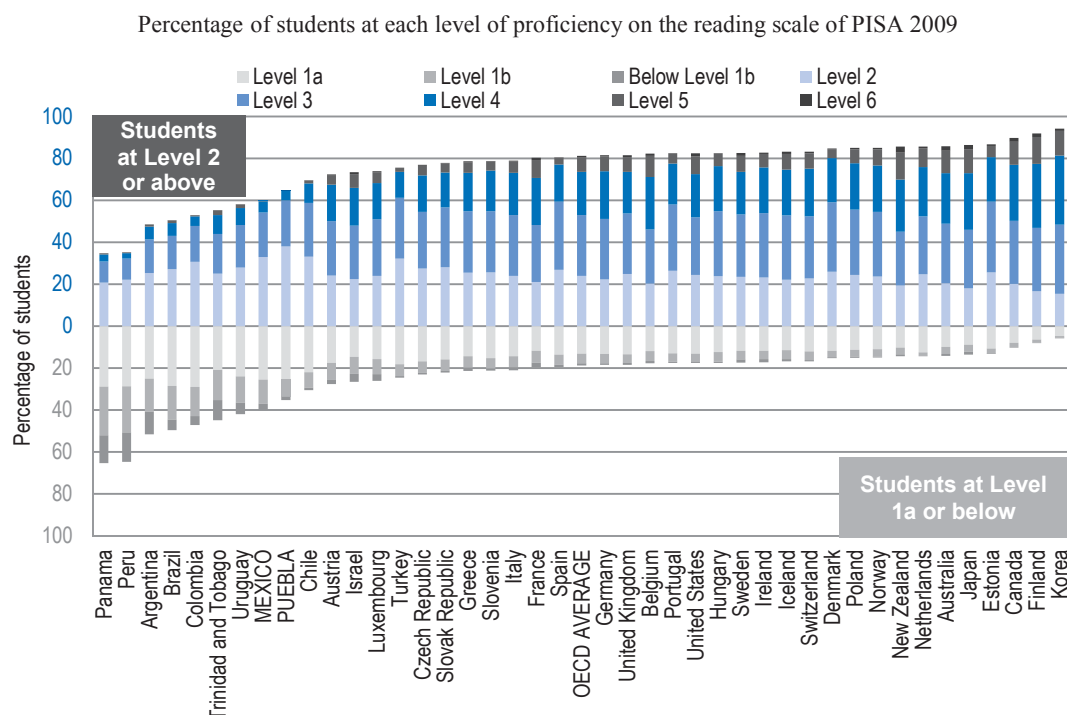
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In short, few students in Puebla are prepared to enter a knowledge-based economy and society. Among 25-34 year-olds in 2010, only 15% had attained an upper secondary education as the highest level of education, while 20% had attained a tertiary education (INEGI, 2011a).⁴ Nationally, in 2010, 44% of 25-34 year-olds had attained at least an upper secondary education – half of the OECD average of 82% of people of the same age group who have at least that level of education (OECD, 2012b).

Despite recent improvements in performance in national and international assessments, poor student performance indicates a need to improve the quality of the education system. The OECD Programme for International Student Assessment (PISA), an international survey that measures the knowledge and skills of 15-year-olds in reading, mathematics and science, shows that overall student performance is very low (see Figure 1.2). In 2009, the mean reading score among students in Puebla was 433 PISA score points; nationally it was 425 score points. Both compare unfavourably with the OECD average of 493 score points (INEE, 2010; OECD, 2010a), and both are solidly within the PISA baseline level of proficiency, Level 2. Although there were remarkable improvements in reading scores between 2003 and 2009 (the average reading score of Puebla students increased 38 points, well above the 25-points increase at the national level⁵), far too many students failed to achieve Level 2 in PISA 2009 (35% in Puebla, 40% in Mexico, and 19% across OECD countries). These students struggle to perform many basic reading tasks and they are unlikely to become lifelong learners or do well in the labour market. In addition, the share of top performers, defined as those who are

proficient at Levels 5 or 6 and who are expected to strongly contribute to the knowledge economy, is very small (0.3% in Puebla compared to 0.4% at the national level and 7.6% on average in OECD countries).

Figure 1.2. Many students fail to achieve a minimum level



Note: Non OECD member economies are included for comparison.

Source: Instituto Nacional para la Evaluación de la Educación (INEE) (2010), México en PISA 2009, INEE, Mexico, D.F.; OECD (2010a), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science* (Volume I), PISA, OECD Publishing.

StatLink <http://dx.doi.org/10.1787/888932830160>

The *Examen Nacional de Logro Académico en Centros Escolares* (National Exam of Academic Achievement in Schools, ENLACE), the national standardised test, confirms improvements in recent years in both Spanish and mathematics at all levels, with the exception of Spanish in 12th grade, and shows positive results for indigenous primary schools relative to other states. Yet it also indicates that around two or three students out of four achieve poor results (Proyecto Educativo, 2012).

Education opportunities and outcomes are strongly related to socio-economic background and location. In Mexico low income, rural areas,⁶ and child labour are strongly associated with fewer education opportunities, including access to education (INEE, 2012). For instance, in Puebla, students from socio-economically disadvantaged backgrounds are almost four times less likely to enrol on time in upper secondary school than those from advantaged backgrounds (22% of students from the poorest 10th of the population enrol compared to 76% of students from the wealthiest 10th of the population) (Proyecto Educativo, 2012). Yet, even if disadvantaged students are enrolled in education, they fall behind their more advantaged peers. Results from PISA 2009 show

that performance and socio-economic background are positively correlated (OECD, 2010b). Among disadvantaged students, those from indigenous groups are particularly at risk as they face multiple obstacles to succeed at school. However, Puebla ranked second in primary education and fifth in lower secondary education in the Index of Inclusive Education Performance, which compares key equity dimensions across Mexican states (Mexicanos Primero, 2013).⁷

The potential of education to foster economic growth and well-being can be further developed. Higher levels of education are associated with greater participation in the labour market, higher employment rates, higher wages, more stable contracts and better job prospects (INEGI, 2011b; OECD, 2012a). However, in Puebla, the differences in labour-market outcomes between education levels are smaller than in other countries, which suggest that there may be a mismatch between the demands of the labour market and the skills of graduates or a greater demand for low-skilled workers. Moreover, the impact of the informal economy is large, and women's participation in the labour market is still low, even though their levels of achievement in education are comparable to those of men (INEGI, 2011b).

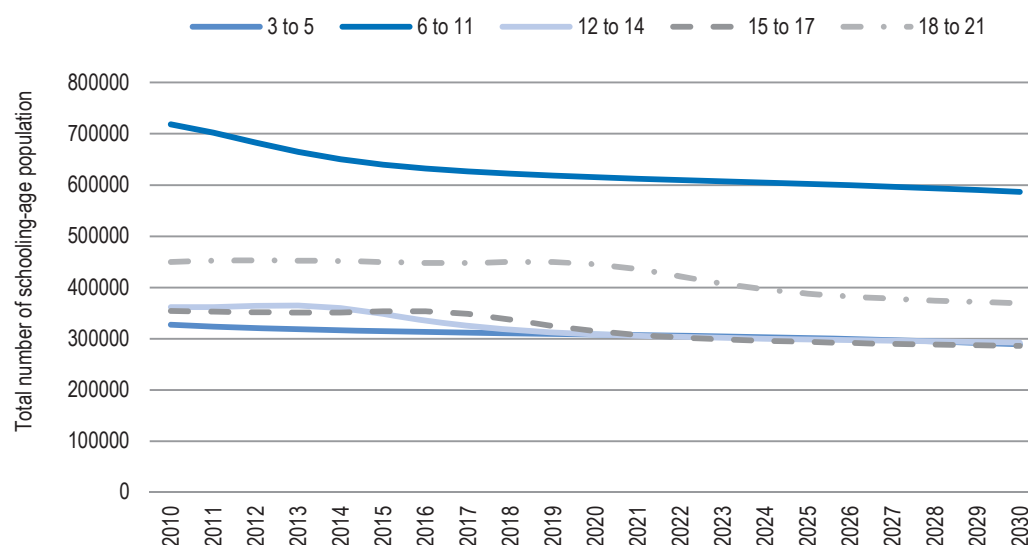
Unique opportunities amidst challenging conditions

The significant progress the state of Puebla has made in recent years has been achieved under challenging conditions, including rapid growth of the school-age population, the distribution of the population across a complicated topography, ethnic and linguistic diversity, significant internal and cross-border migration, and great social inequalities. Indeed, the state of Puebla can be seen as a microcosm of the entire country, a “little Mexico” (see Box 1.1).

The population bulge of Mexican youth challenged the provision of education but now it provides an opportunity to optimise resources, increase attainment and boost the quality of the educational services. In 2010, 3-17 year-olds represented almost one-third of the population (31%) in Puebla, but by 2030 this age group is expected to represent only one-fifth (22%) of the population (see Figure 1.3) (Proyecto Educativo, 2012). Shrinking enrolment in pre-school and primary education can allow resources to be freed-up for improving the quality of education. Meanwhile, the expected increase in enrolment in upper secondary education offers an opportunity to reorganise and improve provision in order to raise the productivity of the future workforce.

Figure 1.3. Shrinking schooling-age, 2010-2030

Total number of schooling-age population projected per corresponding age-levels, 2010-2030



Source: Proyecto Educativo (2012), *Background report on education in the state of Puebla*, Proyecto Educativo SC, Puebla.

StatLink  <http://dx.doi.org/10.1787/888932830179>

In addition, cross-school and cross-country comparisons show that improvements are possible despite challenging conditions. Socio-economic background is not inevitably related to performance: PISA 2009 shows that GDP per capita only accounted for 6% of the variations in average student performance across countries (OECD, 2010a). Some countries with socio-economic profiles similar to that of Mexico perform significantly better than Mexico does (OECD, 2011b). For example, Poland, whose GDP per capita is similar to Mexico's, and Brazil, whose socio-economic profile is similar to Mexico's, have managed to achieve significant improvements in education over the past decade (OECD, 2011b). Poland has reduced the share of low-performers in PISA from 23.2% in 2000 to 15% in 2009, and Brazil has reduced this share from 55.8% to 44.6% during the same period. Turkey's GDP per capita and socio-economic profile are similar to those of Mexico, yet its mean performance in the 2009 PISA reading assessment was 39 score points higher – the equivalent of one year of formal schooling – than that of Mexico (OECD, 2011b).

Box 1.1. The state of Puebla: A "little Mexico"

The state of Puebla is one of the 32 federal entities of Mexico. It is bordered by seven states: Veracruz, Oaxaca, Guerrero, Morelos, Estado de México, Tlaxcala and Hidalgo. The Puebla-Tlaxcala metropolitan zone is the fourth-largest in Mexico and it is a dynamic and fast-growing region in a strategic location between the port of Veracruz and Mexico City (OECD, *forthcoming*).

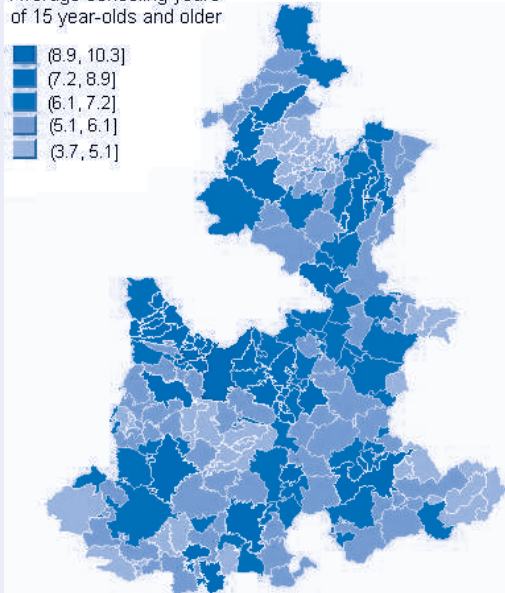
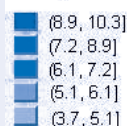


The state's 34 306 km² are divided into seven regions, 217 municipalities and 6 400 localities. In 2010, Puebla had a total population of 5.78 million, a density of population of 168 persons per km², and had the fourth highest percentage (32%) of individuals between 3 and 17 years old (INEGI, 2011a). Some 5.1% of Mexico's population lived in Puebla in 2010, and the state contributed 3.6% to GDP (INEGI, 2012). The breakdown of that contribution mirrored

the national sectoral breakdown: 5% agriculture; 32% industry, of which 25% was manufacturing; and 63% services. The OECD Territorial Review of Puebla-Tlaxcala (*forthcoming*) highlights that the metropolitan area attracts major national and international firms and has built a reputation as both a manufacturing hub specialising in auto production and as one of Mexico's most important centres of higher education. In 2009, Puebla's GDP per capita (USD PPP 8 579) was 35% lower than the national average, but in the previous year, the economy had grown at the greater pace of 2.7% annually. The state has experienced rapid social and economic transformation in recent decades, such as 20 years increase of life expectancy at birth between 1970 and 2010. However, the state ranked 5th of 32 in the national socio-economic marginalisation index, which includes measures of education, housing, income and geographic dispersion (CONAPO, 2010). Some of the main features and trends that challenge the provision of education services follow:

- *Distribution of population.* Puebla has undergone significant urbanisation in recent decades. *Heróica Puebla de Zaragoza* is the state's capital and one of Mexico's most populated cities. Indeed, 44% of 3-17

Average schooling years
of 15 year-olds and older



year-olds live in urban areas of more than 15 000 inhabitants and 32% live in rural areas of less than 2 500 inhabitants (INEGI, 2011a). Under 15 year-olds account for 25% of the population in some municipalities, while in others they represent more than 40% of the population. Large urban areas tend to attract more educated individuals, while rural and isolated areas are characterised by high levels of poverty, marginalisation and exclusion (see map)⁸.

- *Poverty and income inequality.* The state ranks 5th of 32 in terms of poverty, in one of the less-developed countries in the OECD: 61% of the population live in poverty in Puebla compared with the national average of 46% (CONAPO, 2010). Puebla also has the fifth highest illiteracy rate (9.1%) among all Mexican states (INEGI, 2011a). In Mexico, the divide between rich and poor is large: income inequality among the working-age is the second highest in OECD and well above the average (OECD, 2011c).

Box 1.1. The state of Puebla: A "little Mexico" (continued)

- *Ethnic diversity.* Puebla ranks 8th out of 32 Mexican states with around 11.5% of its inhabitants from different indigenous groups. The most spoken indigenous languages are *Náhuatl* and *Totonaca*, which account for 73% and 17% respectively of their overall speakers in the state (INEGI, 2011a). The situation of the indigenous population is of particular concern as a number of factors work together to limit them to achieving only low levels of educational attainment.

Other trends influencing the provision and outcomes of education are migration, family structure and new technologies. The net migration rate is -0.5%, as many individuals migrate to the United States while in recent years internal flows from other states to Puebla have increased significantly (INEGI, 2011a). In addition, the structure of families is changing: between 2000 and 2010, there was a 50% increase in the number of single mothers in Mexico (INEGI, 2011a). And despite significant efforts to increase Internet connectivity in recent years, which now covers 70% of the state, in 2010 only 21% of households in Puebla had a computer and 15% had access to the Internet (INEGI, 2011a).

Sources: El Economista (top); Instituto Nacional de Estadística y Geografía (INEGI) (2011a), *Censo de Población y Vivienda 2010*, INEGI, Mexico, D.F (below).

2. The current education system

The governance of the Mexican education system is complex. The federal government has a prominent role in designing and funding education policies, while states are responsible for the operation of schools. SNTE (*Sindicato Nacional de Trabajadores de la Educación*, National Union of Education Workers), the main teachers' union, is involved in the administration of education at all levels (including in *Normales*, which are higher education institutions). In general, schools operate under very challenging conditions: little autonomy, weak leadership and support, uneven teaching staff, inadequate infrastructure and scarce resources.

Governing a partly decentralised education system

In 1992 a long and complex decentralisation of the education system was started which gave states most of the responsibility for the operation of basic and to a lesser extent upper secondary education as well as initial and in-service teacher education. The process was conceived, designed and implemented by, and to respond to interests of the central government, The process was made in agreement with the SNTE (Fierro, Tapia and Rojo, 2009). As a result, the states responsibilities are limited to the operational and administrative parts of the federation's normative and steering functions.

The central government sets the overall strategy for the education system and assures the uniformity and national character of education services across the country. In particular, it is responsible for education plans and programmes, wage negotiations, important aspects of teacher career such as evaluation and administration and most of financial resources (Fierro, Tapia and Rojo, 2009; Zorrilla and Barba, 2008). The federation continues to play a prominent role in education with a centralised, bureaucratic and vertical approach, a system that has been characterised as having "centralised power and decentralised administration" (Ornelas, 1998). One of the main ways in which the federation guides education and addresses educational needs in schools is through a variety of programmes that leave little room for adaptation to local needs.⁹

The decentralisation process added certain federal services to the state-based ones. In 1990 the federation operated 73% of Puebla's primary and lower secondary schools; by 2010, the state was the main school provider, operating 90% of primary and lower secondary schools and 65% of upper secondary schools (SEP, 2011). The Secretariat of Public Education of the state of Puebla (*Secretaría de Educación del Estado de Puebla*, SEP-Puebla hereafter) is mainly organised into three undersecretariats to co-ordinate each level of education (basic -which includes pre-school, primary and lower secondary education -, upper secondary and higher education) (Proyecto Educativo, 2012). With its emphasis on school operation, rather than on policy formulation, there is little room in this structure for co-ordination, strategic planning and innovation.¹⁰ The main responsibilities of the state are hiring teachers and managing schools, including its infrastructure, while its role in other important issues (*e.g.* curricula, school autonomy, evaluation) is limited.

Limited information about the functioning and needs of schools restricts the capacity to reach and support them effectively. In basic education, SEP-Puebla has decentralised administrative and legal services through 19 *Coordinaciones Regionales de Desarrollo Educativo* (Regional Coordination Offices of Education Services, CORDES) however, the territorial distribution of the CORDES itself generates difficulties to reach schools in isolated areas. An additional support structure (*Centros de Desarrollo Educativo*, Education Development Centres) with a different distribution structure may be introduced soon. However, the division of tasks and coordination mechanisms between the two regional bodies are unclear. In upper secondary education, there are no territorial structures in place, although some subsystems have created their own regional co-ordination units. A new data system is currently underway in order to improve the information available about students and schools' staff, infrastructure and performance (see more in Chapters 2 and 5).

Municipalities in Mexico have fewer responsibilities for education compared to other OECD countries and their role is usually limited to infrastructure issues. Municipalities might have a greater role in rural and isolated areas, where the outreach of the SEP-Puebla is more limited. In addition, municipalities can promote education services and, in Puebla, many of them contributed to the creation of upper secondary schools during the past decade (Proyecto Educativo, 2012). Municipalities also participate in basic education through the Councils of Social Participation at the school and local levels (OECD, 2010c).

Table 1.1. The complex governance of the Mexican education system

Tier of government	Responsibilities
Federation	The federal government has normative authority to assure consistency of education services across the country. The responsibilities of the SEP include developing, supervising and evaluating the education system; establishing student learning objectives (including a national curriculum in the form of study plans and programmes) and assessing whether these are met; authorising textbooks to be used in schools; defining the levels of and principles for federal funding; setting the requirements for the professional and pedagogical competence of educational staff (including study plans for initial teacher education and requirements to enter the teaching profession); negotiating teachers' salaries; regulating a national system of continuous education for basic-education teachers; maintaining a registry of institutions that belong to the national education system; and defining the school calendar. It assures equity of educational provision across the country through "compensatory programmes". The Federal government is also responsible for proposing and promoting policies for the development of institutions and programmes of higher education for teachers.
States	State education authorities are responsible for operating basic (including indigenous) and special schools. They run teachers' colleges (<i>Normal Schools</i>) where most initial teacher education takes place, provide professional development for basic education teachers, and authorise private providers of basic education to operate. Within their basic education subsystem, states have full responsibility for the quality of education, financial management, the appointment and dismissal of teachers, and relations with the school community and the general public. States can also introduce some regional content into the national curriculum (study plans and programmes) following consultation and guidance from the federal SEP. They can also create their own specific programmes for schools and develop evaluation activities to complement those organised by the federal SEP.
Municipalities	Municipalities can promote and provide education services without prejudice to the services offered by other authorities, but their core responsibility is building and maintaining school infrastructure. They also participate in some specific education programmes and in the Councils of Social Participation.

Source: Adapted from Santiago, P., *et al.* (2012), *OECD Reviews of Evaluation and Assessment in Education: Mexico 2012*, OECD, Paris.

The National Council of Educational Authorities (*Consejo Nacional de Autoridades Educativas*, CONAEDU), established in 2004, is formally responsible for co-ordinating decision making between the state education authorities and the federal SEP. However, in practice, it has more of a consultative role, when called for by the federation, and focuses on articulating actions and programmes, disseminating federal regulations, and supporting implementation of programmes (OECD, 2010c; Zorrilla and Barba, 2008). The commission on education of the National Governors' Conference (*Conferencia Nacional de Gobernadores*, CONAGO) also supports interstate co-ordination and collaboration since 2002, although it hands over much of the efforts to CONAEDU (Proyecto Educativo, 2012).

The complexity of the governance structure is mirrored in the distribution of financial resources in the system, which presents important opportunities to increase efficiency and equity. Moreover, the little information about how resources are spent raises serious accountability concerns (CONEVAL, 2011). Some features of education funding are analysed in Box 1.2.

Box 1.2. Funding is insufficient and does not reach the most needy schools

1) *The federation has the principal responsibility for funding, and a large share of funding is earmarked.* While the General Law of Education establishes that financing is a joint effort of federal and local authorities, some 79% of public expenditures on education in 2011 came from the federal budget (SEP, 2011). Resources are distributed mainly through Strand 11 and Strand 33 of the federal budget. Strand 11, which represented 43% of the 2011 federal budget for education (SEP, 2011), includes targeted (or compensatory) education programmes that in most cases is directly spent by federal-SEP and allow for little discretion in spending. Strand 33, which amounted to 49% of the 2011 federal budget for education, corresponds to the direct transfer of funds to state authorities for education services (SEP, 2011). Some 95% of Strand 33 consists of the Contributions Fund for Basic and Normal Education (*Fondo de Aportaciones para la Educación Básica y Normal*, FAEB), which is mainly devoted to staff compensation (CONEVAL, 2011). Despite the modification of FAEB's formula in 2007, from a supply-side approach (*i.e.* staff and infrastructure) to placing a greater weight on demand factors (*i.e.* enrolment, quality), the new formula still has many weaknesses, such as not considering the student or school-level disadvantage, and the indicator on education quality has not yet been defined (OECD, 2013a).

2) *States have small budgets and little discretion on the allocation of resources.* The large difference between the expenditures requirements of a state and its own revenues, which is mainly closed via earmarked transfers, undermines efficiency and public accountability (OECD, 2013a). In Puebla, 38% of the overall expenditure on education (excluding programmes) was contributed by the state in 2011, which is similar to the national average and amounted to MXN 8 863 million out of the MXN 23 336 million (SEP, 2012b).

3) *While expenditure on education is the largest share of the budget and has increased in recent years, spending per student is still insufficient* by international standards. The state of Puebla and the Mexican government devote the highest share of their total budget to education and both have increased that share in recent years despite declines in GDP. In Puebla, expenditure on education almost doubled between 2005 and 2010 (SEP, 2011). However, relative to GDP, total public expenditure on all services in Mexico is the second lowest among all OECD countries (26.2% of GDP compared to 45.2% across OECD countries; OECD, 2012b) and is insufficient to meet the needs of a large education system. In 2009, Mexico's expenditure per student from primary to tertiary education was the lowest among OECD countries (USD 2 875 compared to an average of USD 9 252 in OECD countries; OECD, 2012b).

4) *Expenditure is not focused on the early years.* In Mexico, expenditure per tertiary student, excluding Research & Development activities, is 3.1 times that per primary student and 2.7 times that per secondary student (OECD, 2012b). This exacerbates inequities as students in tertiary education are mainly from advantaged backgrounds.

5) *Most spending is allocated to staff, while capital expenditure is negligible.* In Mexico, capital expenditure accounts for only 3% of total expenditure on primary, secondary and post-secondary non-tertiary education; the remainder is current expenditure (OECD, 2012b). Some 92% of current expenditure is devoted to staff compensation (the OECD average is 78%) while 80% of current expenditure is devoted specifically to teachers' salaries (the OECD average is 62%). Other current expenditure, such as for teaching materials, accounts for only 8% of the total (the OECD average is 22%). The lack of resources means that schools must raise the needed funds from local authorities, parents or other stakeholders.

Box 1.2. Funding is insufficient and does not reach the most needy schools (continued)

6) *The allocation of resources to schools bears little relationship to the level of disadvantage of schools or their students*, and information about the resources available to individual schools is very limited. Material and human resources vary to a great extent according to the location and type of school¹¹. A large part of funding is distributed through programmes, while many of the smallest and poorest schools do not have the administrative capacity to complete the application process or handle the reporting requirements (OECD, 2010c). Moreover, schools may not receive sufficient funds for regular operations (e.g. maintenance, office supplies, cleaning equipment). In Mexico, the average student attends a public school where only 49% of school funding comes from government sources (compared to 89% in OECD countries), while over 41% of school funding comes from parents, 6% from donations, and 4% from other sources (OECD, 2012c). The lack of resources is of particular concern for disadvantaged schools as it is difficult for them to attract qualified teachers and they have less capacity to fundraise from parents and the municipality, which exacerbates inequalities.

7) *Private expenditure is significant and has increased in recent years*. The private sector accounted for 19% of the total expenditures in primary, secondary and post-secondary non-tertiary education in 2009, considerably higher than the OECD average (9%), while the equivalent proportion in 2000 was 14% (OECD, 2012b). While the high number of students enrolled in private institutions partly explains this proportion, the national household survey reveals that households in which students attend public schools allocate half (55%) of their educational expenditures to education services (e.g. fees, school materials) although public schools are officially free-of-charge in Mexico (Campos, Jarillo and Santibanez, 2010).

Source: OECD (2012b), *Education at a Glance 2012: OECD Indicators*, OECD Publishing; OECD (2012c), *Public and Private Schools: How Management and Funding Relate to their Socio-economic Profile*, PISA, OECD Publishing; OECD (2013a), *OECD Economic Surveys: Mexico 2013*, OECD Publishing; Secretaría de Educación Pública (SEP) (2011), *Sistema Educativo de los Estados Unidos Mexicanos: Principales Cifras Ciclo Escolar 2010-2011*, SEP, México, D.F.; Secretaría de Educación Pública (SEP) (2012b), *Cuestionario sobre Financiamiento Educativo Estatal*, conducted by the SEP and available from.

Recent reforms in basic and upper secondary education

Over the past two decades, several reforms have transformed the legal framework of the Mexican education system. In 2011, the Integral Reform of Basic Education (*Reforma Integral de Educación Básica*, RIEB) consolidated previous reform efforts and articulated the different levels of basic education with a more skills- and competencies-based curriculum.¹² In upper secondary education, significant steps were taken in recent years that culminated in the Integral Reform of Upper Secondary Education (*Reforma Integral de Educación Media Superior*, RIEMS) in 2008. This reform aims to improve the quality, relevance, equity and coverage of upper secondary education in order to reduce the incidence of drop out and smooth the transition between basic and tertiary education. More recent initiatives, notably the Constitutional amendments of February 2013 to establishment of a professional teaching service and to guarantee the independence of the INEE among others as well as its subsequent legislative developments, provide important opportunities for nationwide improvement (see Box 1.3).

The role of the teachers' union and other stakeholders

The relationship with key stakeholders in the country is monopolised by the major teachers' union in Mexico, the SNTE, who has a strong influence on education policies and the operation of services. The SNTE has participated in the major political agreements concerning education and controls the deep-rooted power structures in schools. Despite the decentralisation process, the SNTE continued to “co-administrate” the system with an important role in personnel decisions as appointments to posts, teachers' tenure, rules on career and working conditions, scholarships and other benefits (Tapia, 2004). In Puebla, almost all teachers are members of this union¹³ and other unions struggle to gain a foothold. For basic school teachers, the affiliation with SNTE is mandatory as stipulated by a Presidential Decree of 15 March 1944, which recognises SNTE as the only organisation that represents teachers and its right to charge fees that amount to 1% of teachers' salaries. The current Puebla government seems to benefit from a privileged relationship with SNTE, as shown in the union's support during elections and for education policies (Proyecto Educativo, 2012).

Given the involvement of the SNTE, there are few opportunities for other stakeholders to participate in shaping the education system. Other forms of formal student and teachers' participation (*e.g.* science teachers' associations, lower secondary student associations), which are active in most OECD countries, are almost nonexistent. However, representatives of civil society and the business community are increasingly becoming more involved in Mexico. Among these are: *Mexicanos Primero*, *Suma por la Educación*, *Observatorio Ciudadano*, *Hacia una Cultura Democrática*, *Proeducación*, *Servicios a la Juventud*, *Empresarios por la Educación Básica*, *Compromiso Social por la Educación* and *UNETE (Unión de Empresarios para la Tecnología en la Educación)*.

Despite the creation of social participation councils at the school, municipal, state and national levels, little progress has been made broadening participation. In 2011, the government of Puebla created the *Consejo de Educación del Estado de Puebla* (Council of Education of the State of Puebla, CEEP) to facilitate participation of education actors and major stakeholders in the design of education policies in the State. This includes representatives from the federal and state SEP, other secretaries related to education, higher education institutions, unions, and non-governmental organisations.

3. The main features of the education services in Puebla

A fragmented structure with different modalities and school types

The Mexican education system is organised into basic, upper secondary, and higher education (See Annex 1.A1). School attendance is mandatory from pre-school to upper secondary education,¹⁴ albeit that universal coverage of upper secondary will be fully mandatory by 2021-22. Basic education is divided into three levels: pre-school (3 years in duration; for 3-5 year-olds), primary (6 years in duration; for 6-11 year-olds), and lower secondary (3 years in duration; for 12-14 year-olds). After finishing basic education, students can enrol into upper secondary education, which lasts for 3 years and caters to students who are typically between 15 and 17 years old. Upon completion of upper secondary education, students are eligible to enter higher education.

In the academic year 2010-11, the education system of Puebla served 1.88 million students across all levels, representing a 21% increase over enrolments in 2000-01 which were mainly concentrated at upper secondary and higher education. In Puebla, around 1.4 million students were enrolled into basic education, 234 000 in upper secondary and

179 000 in higher education during the 2010-11 school year (SEP, 2011). In 2010, the number of 5-14 year-olds enrolled in education in Puebla was twice that in Finland, similar to that in Belgium and Portugal, and half that in Chile (OECD, 2012b).¹⁵ During 2010-11, 58 917 teachers served 11 575 schools in basic education, while 15 667 teachers were distributed among the 1 441 upper secondary schools (SEP, 2011).

Education services are divided by modalities to respond better to the state's diverse linguistic and cultural needs, remote locations and migrant groups. Each modality is typically associated with a type of school and differs by education level. Pre-primary and primary education are provided in three distinct modalities: *general*, which mainly caters to students in urban areas; *communitarian*, which focuses on very small villages; and *indigenous*, which serves mainly students from indigenous backgrounds. Lower secondary education is also provided in three distinct modalities: *general*, *technical* and *Telesecundarias*¹⁶. There are two programmes in upper secondary education, *general* and *technical-professional*, and a variety of providers in uncoordinated subsystems. Students with special needs attend mainstream schools with the assistance of specialists; only those students who cannot handle the coursework attend, if available, a *Centro de Atención Múltiple* (Multiple Attention Center, CAM), a special school for disabled students.

Puebla has many *multigrado* schools, in which students from different education levels are taught together in the same classroom. In primary education, *multigrado* schools accounted for 44% of all schools in the 2009-10 school year (INEE, 2012). *Multigrado* schools were created as a temporary solution to increase coverage, particularly in rural and isolated areas, but have remained over the years, even if the quality of teaching may be compromised when effective ways of supporting all students simultaneously and their teachers are not in place (Proyecto Educativo, 2012). Puebla has also pioneered a form of school organisation where multiple education levels coexist in the same campus under a conglomerate of schools, from pre-school to upper secondary education, which is known as *Centro Escolar* (School Centre). There are only 32 such schools in the state (Proyecto Educativo, 2012) and they cater mostly to urban students. Although the competitive advantage of *Centros Escolares* is that they offer additional services and infrastructures, the high investment required has hindered their expansion.

As in many other OECD countries, parents are free to choose the school they want their children to attend as long as there are places available. The selection criteria applied when the number of applications exceeds the spots available varies by education level. The vast majority of students attend public schools (90.7% in basic education and 82.1% in upper secondary in the 2010-11 school year) (Proyecto Educativo, 2012).

Although the Constitution mandates that basic schooling is free of charge, in practice most schools in Puebla, as in other states, ask parents for financial contributions which in many cases are essential for the operation of schools. Voluntary fees are legal but vaguely regulated and typically range from MXN 200 to MXN 1 800 per student per year (Proyecto Educativo, 2012). The SEP-Puebla has launched some initiatives aiming at informing parents about the voluntary nature of such fees in public schools and encouraging denouncing deviations of resources. Only a small but increasing fraction of students attends private schools as there are no public subsidies or vouchers. In contrast to public schools, private schools have autonomy in managing human resources as well as in developing teaching and learning approaches (Santiago *et al*, 2012).

Schools operate under challenging conditions

Mexico has one of the lowest levels of school autonomy among OECD countries, with principals having little or no discretion to decide on how their school is managed and virtually no funds at their disposal (OECD, 2010d). Legislation has increasingly placed schools at the centre of education improvement; yet the lack of autonomy as well as the failure to change significantly the way schools work, including teachers' practices and school management and support, has hampered their potential (Tapia, 2004). In general, schools operate within a rigid and hierarchical system in which education policy is many times characterised by isolated actions, without planning and coordination between them, and schools are overburdened with growing administrative tasks (Fierro, Tapia and Rojo, 2009). School principals do not hire or remove teachers and have little say in teacher appraisal, teacher training, or establishing incentives and career rewards. In addition, schools do not have autonomy over curricula or learning materials. School budgets are limited and highly dependent on the ability of school leaders to participate in programmes; in practice, schools largely rely on parents' donations.

The necessary pre-conditions for school autonomy, which are the existence of professional staff to run schools and an effective structure of school support, still do not exist, either in Puebla or in Mexico, as a whole. Many school leaders lack the knowledge, abilities and attitudes for the job. In addition, their tasks do not focus on improving learning, as training, recruitment, recognition and support are not based on pedagogic performance (Fierro, Tapia and Rojo, 2009). In Mexico, there are no clear competence frameworks or standards for school leaders and supervisors, and their tasks are not always recognised.¹⁷ In general, school principals are responsible for organising and managing the school. In large primary and lower secondary schools, there may also be technical pedagogical advisors (*asesores técnico pedagógicos, ATPs*), although they do not have a clearly defined role as their post does not officially exist within the legal structure. Supervisors function as the direct link between schools and educational authorities. In schools of four or more teachers, a School Technical Council (*Consejo Técnico Escolar*) provides advice to the school principal.

A national law has recently created more opportunities for social participation and accountability by requiring the establishment of School Council of Social Participation (*Consejo Social de Participación Social*) composed by school principals, teachers, parents, community members and former students in each school. Puebla is one of the states with the highest number of school councils: 93% of the schools in the school year 2011-12. Despite this, nationwide many of them are inactive and their existence may only be because of the legal obligation (SEP and CONAPASE, 2012). In practice this means that school councils maintain weak links with other councils (*i.e.* municipal, state and federal), meetings are infrequent, their participation in school operation (*i.e.* planning, management) is limited and few of them foster transparency and accountability of school outcomes and financial resources. Moreover, their relationship with the Parents' Association, which has traditionally played a very important fundraising role in supporting schools, seems unclear.

Teachers and the learning environment

Teachers are the building blocks of the success of a country's education system, but in Mexico, and Puebla is no exception, the need for a high quality teacher workforce has encountered economic, political and pedagogic difficulties. The roles and expectations of teachers are unclear because there are no teacher standards in place. Many teachers are

either very young or very old and many face difficulties in teaching because of their inexperience or changes in pedagogical methods. The teaching profession in Mexico does not attract the best candidates, and the quality and relevancy of initial teacher training at *Normales* and in teacher training programmes in universities are uneven (see Chapter 3) (OECD, 2010c).

In addition, teachers may not be well-prepared to perform their tasks since training and placement in schools is not entirely based on the needs of schools, school leaders provide them with little support to improve their teaching practices, and student-teacher ratios are high. Many teachers are faced with challenging labour conditions hampering their professionalisation as only 28% of lower secondary teachers in Puebla work full time (INEE, 2012); many teach in one school in the morning and another in the afternoon, or work in a completely different sector during the time they are not teaching. Around 80% of teachers and other staff benefit from the National Teaching Career Programme (*Programa Nacional de Carrera Magisterial*) which provides financial incentives and structures career progression, but teaching does not enjoy the same status as other professions.

The learning environment of schools is very challenging. The learning time is short: half day schooling is dominant, few students attend out-of-school programmes and many participate in domestic or paid work.¹⁸ In addition, 70% of school principals in Mexico report extensive absenteeism, late arrival of teachers, and a lack of pedagogic preparation as factors that hinder instruction and reduce the quality of teaching (OECD, 2009). School infrastructure is often poorly maintained, and basic services are lacking. In contrast with countries that perform well in PISA, students and parents in Mexico have low expectations of education, students do not believe that success depends on their own efforts, and parents provide them with little support with their homework (OECD, 2010d).¹⁹

4. Building the Puebla education model

Improving Puebla's education system requires successful reforms in the short and medium term within a clear long-term strategy. A profound transformation of the education system also requires revising the governance structures - this means both building a more policy-oriented structure in Puebla and putting forward a new federal governance system. In addition to well-functioning governance structures, the first steps on Puebla's road to education reform in pre-primary to upper secondary education involve short- and medium-term improvements in four main areas:

- *Schools and student support:* providing high-quality learning experiences to all students, particularly disadvantaged students; supporting students throughout their education career, focusing on the early years and remote areas; and introducing a system of school support and evaluation (see Chapter 2).
- *Teachers and school leaders:* establishing clear standards; restructuring initial teacher training; and fostering support, professional development and evaluation of new and experienced teachers; and better selecting and preparing current and future school leaders and supervisors (see Chapter 3).
- *Attainment and quality in upper secondary education:* improving the governance of the system; ensure quality, mainly in *Bachilleratos Generales*, and relevance of vocational programmes; enhancing access and ensuring completion of education, particularly among disadvantaged students (see Chapter 4).

- *Infrastructure*: improving governance and planning; securing funding and targeting it to the neediest schools; and taking learning needs into account (see Chapter 5).

Strengthening the capacity for improvement

A more policy-oriented governance structure in Puebla

While the state seems eager to assume more responsibility in education, the current bureaucratic structure was designed mainly to operate schools. Therefore, Puebla will need to take steps towards playing a greater role in formulating education policy and continue to build its capacity to gain from:

- *More diagnosis, planning, innovation and evaluation in policy making.* A more evidence-based process of knowledge mobilisation, analysis and planning can promote more effective policy design and implementation. Also, innovation is key for adapting to local conditions, constraints and opportunities. A well-designed evaluation system can show the impact of a policy, guide policy making, and inform actors on how to improve education outcomes. In this regard, the education data system that Puebla is developing is promising and could be further developed and used in designing policies at both the state and school levels.
- *Windows of opportunity within the current federal arrangement.* A review of the division of responsibilities with the federation can help to identify reforms that can be launched at the state level and reforms that could be put forward to the federation. In agreement with the federal SEP, Puebla can also pilot some new policy arrangements. Puebla has already taken steps in this direction, such as listing all the programmes offered to schools; but these could be restructured to focus on the most effective programmes and match them better to schools' needs.
- *A structure ready to spur and scale-up improvements.* The bureaucratic structure of the SEP-Puebla may not be suitable for playing a greater role in education policies. A reorganisation that focuses on student learning, rather than education levels, could be more effective in supporting students along their educational careers. Moreover, the capacity of staff to design, manage and evaluate policies may also need to be enhanced.
- *A system that reaches individual schools.* Revising the structures that will deliver the reforms is paramount for successful implementation. The large number of small and isolated rural schools and the undersupply of well-trained, effective school leaders make it critical to ensure that there are well-functioning school-support structures. Municipalities can also play a greater role in education services.
- *A “whole-of-government” approach.* Since education is intertwined with other policy areas, such as social services, economic planning, and demographic forecasting, increasing co-ordination with other government bodies for a “whole-of-government” approach can enhance the impact of education policies. For instance, closer co-operation with the Council for Population can contribute to better demographic forecasting and, consequently, better planning of education services.
- *A more professional relationship with the SNTE.* While the SNTE represents the vast majority of teachers, its good working relationship with the state should not be maintained at the expense of the quality of education provided. A joint negotiation with the two chapters of the SNTE in Puebla can ensure that there are not two systems in parallel and can thus reduce complexity in governance, inefficiency in the use of

resources, and the risk of labour conflicts. Puebla should explore legal ways to provide education staff not affiliated to the SNTE with access to equal career professional opportunities.

- *The engagement of a broad set of stakeholders.* Frequent and transparent communications and opportunities for participation can facilitate meaningful and ongoing engagement. Stakeholders include teachers, representatives from teachers' unions, school and district leadership, school board members, other school and district staff, and other community representatives, such as business leaders and parents (OECD, 2010c).

A greater role in formulating education policies should be combined with more fiscal co-responsibility and heightened accountability mechanisms. Although states governments can raise a range of taxes in Mexico, tax revenues are low mainly because states governments have limited incentives and capacity to use their taxing powers (OECD, 2011a).

...and a new federal governance system

Significant improvements in Puebla also require changes in the Mexican education system. The new federal administration (2012-2018) has already set in motion improvement in key areas, such as the recruitment and promotion of teachers and school leaders (see Box 1.3) (OECD, 2013b). In addition, a new devolution arrangement can foster the innovative and effective policies that are needed to transform a large education system burdened with inequities in education resources and outcomes and a complex, bureaucratic organisation (OECD, 2010c). A new governance and funding system could include:

- *A long-term perspective to provide guidance to other actors and achieve greater coherence in policies* (OECD, 2010c). There is no tradition for long-term planning in Mexico, and the absence of agreements on priorities and changes in federal education authorities make it difficult to establish long-term policies at the state level (Proyecto Educativo, 2012).
- *A greater role for states in policy design to respond to local conditions, constraints and opportunities.* Some states have introduced innovative changes in different areas, such as teachers' professional development, supervision, school networks and peer-to-peer tutoring initiatives (OECD, 2010c), but lack of autonomy and fiscal capacity hamper state-driven innovation on education policies (Fierro, Evans and Tapia, 2009).
- *A clearer distribution of responsibilities that fosters efficiency, responsiveness and accountability.* Because decentralisation has not been completed, there is often a lack of action, duplicated effort or lack of co-ordination (Zorrilla and Barba, 2008) that, in turn, raises the question of accountability (CONEVAL, 2011).
- *Stronger vertical and horizontal intergovernmental mechanisms to facilitate co-ordination and collaboration with the federation and between states.* Revamping the existing mechanisms (*i.e.* CONAEDU and CONAGO) or finding more institutionalised ways to co-ordinate will help to engage states throughout the reform process and facilitate policy exchange.²⁰
- *A more professional relationship with teachers' unions and more avenues for stakeholder participation to raise education expectations.* SNTE should, as any other union, continue protecting its members' labour rights. However, its participation in the

design and implementation of the education policies in Mexico should progressively be limited. This is the standard practice in the rest of OECD countries.²¹ In addition, a unique wage negotiation could avoid double negotiations that put more pressure on local budgets (CONEVAL, 2011). Puebla must consolidate professional and transparent relationships with other unions. This can be done by providing them with legal recognition and by allowing teachers to choose and finance the union or association of their choice. Strengthening the participation of other social and economic actors through formal and transparent channels can also raise the demand for better education services.

- *A clearer and simpler funding system for a more efficient and equitable resource allocation.* The sources of funding and the distribution of resources are so complex and unclear that the total expenditure and its breakdown by relevant variables to take account of efficiency and equity are unknown. Clarifying and simplifying the sources of funding can help to optimise resource allocation and increase transparency and accountability at both government and school levels. In addition, the return on investment in education can be increased by focusing on the early years and targeting resources to the students and schools that need them most (OECD, 2012a). The high reliance on parents' financial contributions signals an urgent need for exploring alternative funding ways, particularly for school infrastructure and to limit inequities across the school system.

The success of education reforms will be limited if there are no changes in other areas, such as policies to foster economic growth, fiscal reform or labour laws. Precious human capital will be wasted if individuals cannot find jobs that offer good career prospects and a chance to escape poverty. Low revenues and high spending require fiscal reform (OECD, 2011a), including a revision of state funding formulas and incentives for local tax collection. A comprehensive reform of the labour market and stronger enforcement of labour and tax laws are needed to tackle the key structural problems in the Mexican labour market (OECD, 2012d; OECD, 2011a).

Box 1.3. Recent federal initiatives and reforms

The new federal administration has already taken important steps to boost the quality of the education system. As part of the *Pacto por México* agreement with the three main political parties, a set of legislative education reforms was presented to the National Congress and ratified by the majority of the Mexican states. This provides a route map for education, including the following goals and initiatives:

- *Increase education coverage and quality* in upper secondary education (to at least 80%) and tertiary education (to at least 40%). A national scholarship programme for disadvantaged students in upper secondary and tertiary education will be established and a “scholarship-wage” scheme tested.
- *Improve teaching and learning conditions* by *i)* enhancing autonomous management in the schools, mainly to help them improve their physical surrounding, solve basic management issues, and increase community participation; *ii)* establishing full time schools (6-8 hour days), with a mandate to make better use of available time for academic development, and improve their students’ diet; *iii)* providing laptops to all public school students in grades 5 and 6.
- *Improve teacher quality* by creating a professional teaching service (and eventually, for directors and supervisors), with national competitions for teaching posts and rules for granting tenure, and ensuring that salary increases correspond to the teachers’ appraisal and performance. Also, the government will aim at strengthening initial teacher training by supporting *Normales* (Initial teacher training institutions) and mobilising the knowledge and human capital available in the country.
- *Improve system management* by creating an education information and management system based on a nationwide census of schools, teachers and students and consolidating the national education evaluation system (INEE) and making it fully autonomous.

Some of the above objectives have already been instrumented into amendments to the Constitution of Mexico. The reform, which entered into force in February 2013, sets the basis in key aspects and requires further legislative development:

- *Establishes the pillars for a professional teaching service:* by introducing a competitive procedure (*concurso de oposición*) to guarantee suitability in the appointment, promotion, recognition and tenure of teachers, school principals and supervisors in basic and upper secondary education. Moreover, it declares nullity of non-conforming previous appointments.
- *Enshrines the independence of the INEE into the Constitution:* The INEE is proposed as the highest quality assurance authority of the national basic and upper secondary education system. It will develop indicators to be complied by federal and local education authorities, and will be expected to generate standards for the improvement and enhancement of education and equity. The constitutional reform sets out its composition, selection and governance processes.

In addition, the amendments entrust the legislator and competent authorities to provide for *i)* the creation of an information and management system for education, which should start with a census of schools, teachers and students in 2013 and result in a single platform that gathers information and connects directly school principals and the education authorities; *ii)* the use of teacher performance to increase the relevancy and capacity of the national teacher training system; *iii)* the adaptation of the legal framework to provide schools autonomy to engage with parents and community in resources, progressively expand full-time schools upon resource availability and forbid unhealthy food in schools.

Source: Government of Mexico (2012), *Pacto por México*, Retrieved from: www.presidencia.gob.mx/wp-content/uploads/2012/12/Pacto-Por-México-TODOS-los-acuerdos.pdf; Government of Mexico (2013), *Diario Oficial de la Federación*, 26 February 2013.

Envisioning the Puebla education model in a long-term plan

Initial steps should be embedded in a long-term vision of the Puebla education model. In Puebla, and in Mexico, planning is usually limited to the six years electoral mandate and longer term strategies are very rare. The government of Puebla is currently preparing a long-term education plan to define how the education system should look like twenty-five years from now and build the Puebla Education Model. Drafting a long-term plan will provide focus on the priority axes and it will build consensus for the necessary reforms. Successful education models are the result of long-term visions that encompass far-reaching reforms that are coherent with policies and practices across all aspects of the system and that continue over time as well as being consistently implemented. Moreover, long-term plan establish clear goals and guides and align efforts of all the actors of the education system towards educational improvement (Fullan, 2001; OECD, 2010c; 2011d).

The education model of Puebla should aim at providing high levels of quality and equity. Countries such as Finland, Japan, Korea, Ontario (Canada), Poland and Scotland (United Kingdom) show that high quality and equitable learning outcomes are possible, as well as rapid improvement. As these countries did before, Puebla should envisage a model with very strong early school years; in which all students are followed, guided and supported as soon as they enter the system; that prepares all students until at least upper secondary education, preventing drop out and equipping them with the skills to succeed in their lives; a selected highly-qualified teaching force and school leadership, and a well-functioning governance structure with a well-consolidated support system for every school, particularly in disadvantaged areas.

The size and significance of the education system make reforms particularly challenging. Reform experiences in OECD countries identify key ingredients for success (OECD, 2010c): *i)* strong leadership to promote the deep structural changes needed; *ii)* setting a small number but clear and realistic goals; *iii)* engaging all stakeholders to avoid resistance and controversy; and, *iv)* creating a bureaucratic structure that supports reforms. These ingredients were ingrained, for example, in Ontario's (Canada) reform strategy (see Box 1.4).

Box 1.4. Making reforms happen in Ontario (Canada)

Since 2000, Ontario (Canada) has shown how consistent application of centrally-driven pressure for higher results, combined with extensive capacity building and a climate of relative trust and mutual respect, can enabled the education system to achieve progress on key indicators, while maintaining labour peace and morale. Key aspects include of the reform strategy include:

- 1) Strong leadership:* The sustained leadership of the Premier as well as its active, sustained, personal and consistent focus on education over the years has been fundamental to the success of the reforms.
- 2) Few clear and realistic goals:* Systemic change across several layers of government and 5 000 schools required a limited number of goals that could serve as a focus for coherent effort. Two central commitments guided the work of the ministry with ambitious long-term quantitative targets: increasing literacy and numeracy in elementary schools, from 55% to 75%, and increasing the upper secondary graduation rate from 68% to 85%.

Box 1.4. Making reforms happen in Ontario (Canada) (continued)

3) *Clear division of responsibilities as well as system coherence and alignment:* There was clarity in the role of the ministry and the district during the reforms. The role of the ministry was to set clear expectations and targets, provide funding, create a working collective bargaining agreement that would support improved teaching and learning, provide external expertise, and provide support for struggling schools. The role of the district was to align its personnel and hiring policies with the overall strategy, and to support the schools as they went through continuous processes of learning. There was clear recognition that it was at the school level in which change had to happen, and that the role of other actors in the system was to support the learning and change occurring in the schools.

4) *Capacity for improvement and careful attention to implementation:* The bureaucracy was rearranged with a specific-purpose secretariat responsible for building the capacity and expertise, which was separated from the ministry, and thus was able to start fresh without the usual bureaucratic hurdles. Teams were also required to be created in each district and each school to lead the work on literacy and numeracy.

5) *Ongoing engagement with key stakeholders:* The government worked to build a sense of shared understanding about the problems of the system and purpose of policy responses among key stakeholder groups. The ministry met with the major teachers' unions, superintendents' organisations, and principal associations to discuss ongoing reform strategies. The Ontario Education Partnership Table where a wider range of stakeholders could meet with ministry officials was also created and this led to Working Tables where smaller groups of stakeholders worked in more detail.

Source: Adapted from OECD (2011d), *Lessons from PISA for the United States, Strong Performers and Successful Reformers in Education*, OECD Publishing, <http://dx.doi.org/10.1787/9789264096660-en>.

Notes

1. Zorrilla and Barba (2008) argue that the interest in developing education policies differs across states and suggest that this can be measured on the basis of the following four criteria: the appointment of the Secretary of Education, the reorganisation of the administration, the amount and allocation of resources, and the design of an education project. In the case of Puebla, the current government seems to meet these four criteria. The Secretary for Education has long experience in the field and has chosen a staff from across states in lead roles, education expenditure has increased, and the administration is aiming to create its own education model.
2. Federal SEP reports the average number of years of schooling attained by the adult population in Puebla is 8.17 years (a national average of 8.85 years) (Sexto Informe de Labores 2012).

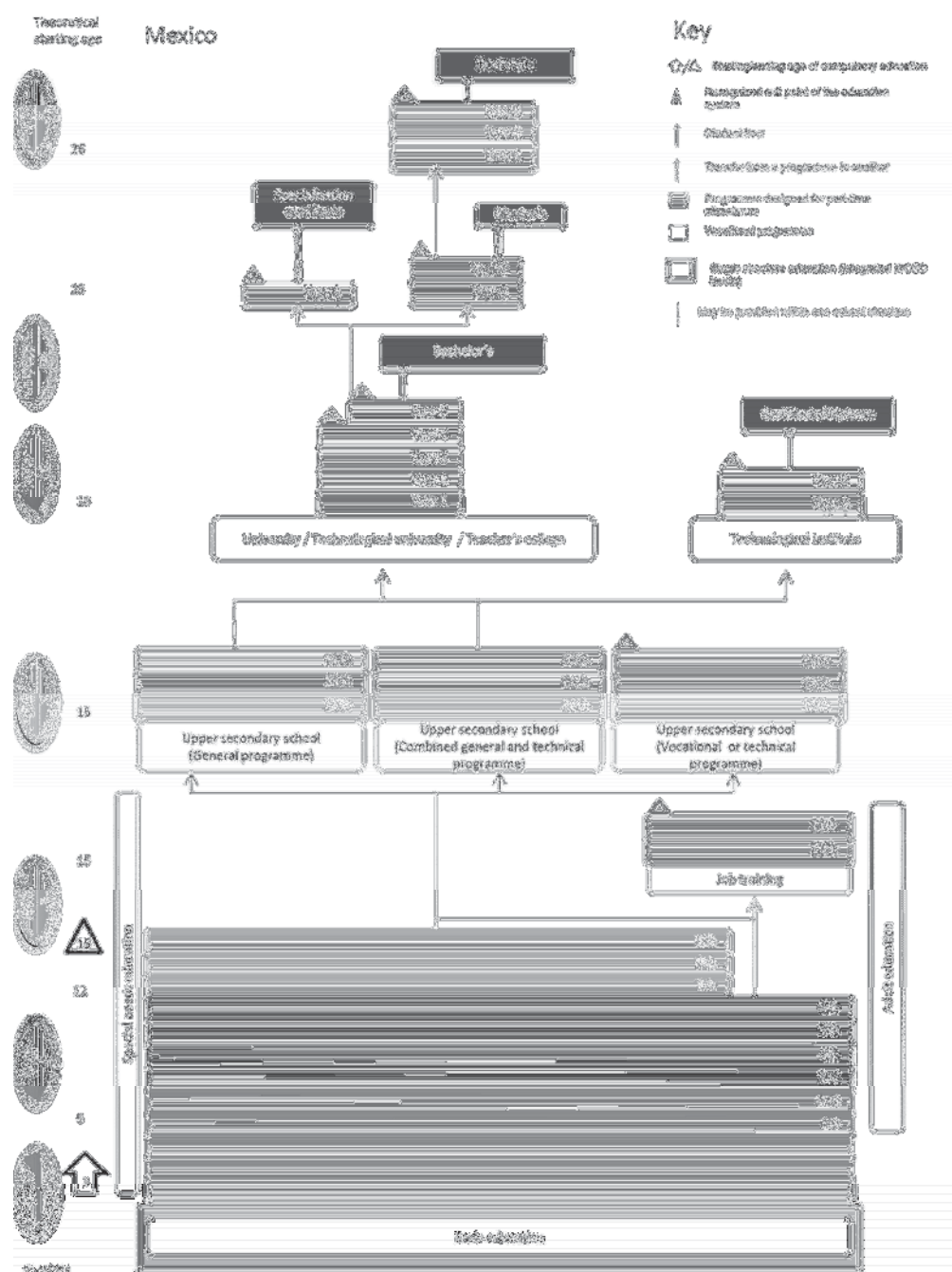
3. Own estimation from SEP (2012). These percentages are only an approximation as there is no formal information system to track students along their education career.
4. Own estimates from the 2010 Census of Population and Households (INEGI, 2011a). Concretely, 129 421 individuals had attained an upper secondary education as the highest level of education and 173 109 a tertiary degree out of the 862 050 inhabitants at the age group 25-34 year-olds.
5. However, results need to be interpreted with caution. There are important caveats when comparing the main field of assessment of different years as neither the questions nor the students are the same. In addition, the main field of assessment in PISA 2003 was mathematics rather than reading, which means that the assessment of reading was less comprehensive and, therefore, the comparability of results is limited. In this regard, when comparing 2000 to 2009 at the national level, the increase is much smaller and only accounts for three score points, from 422 to 425 (INEE, 2010). Unfortunately, sub-national data is only available from 2003, and progress in Puebla will need to be confirmed with the 2012 PISA assessment.
6. The level of attainment is unevenly distributed across the 217 municipalities of the state. Based on INEGI data from 2010, in 190 municipalities, more than 50 percent of 15-year-old or more did not finish basic education and, in 19 municipalities, the proportion of the population without basic education rises to 75% or more. Four municipalities have only 10 or fewer inhabitants with at least some higher education and in 21 municipalities there are no residents who have completed any graduate studies (Proyecto Educativo, 2012).
7. The *Índice de Desempeño Educativo Incluyente* (IDEI, Index of Inclusive Education Performance) is elaborated by Mexicanos Primero, a prominent civil society organisation, in an annual basis since 2009. The IDEI ranks each Mexican state on a series of six indicators related to student learning, effective education progress, dropout, teacher quality, school supervision, and parent and community involvement. Concretely, the IDEI takes into consideration *i)* the percentage of students scoring above the insufficient level in ENLACE; *ii)* probability to transit smoothly between primary and lower secondary and within lower secondary; *iii)* percentage of students who drop out; *iv)* percentage of teachers who pass the ENAMS (*Exámenes Nacionales para la Actualización de los Maestros en Servicio*, National Exams for the Development of In-service Teachers); *v)* percentage of supervision areas with 20 or less schools; and *vi)* percentage of schools that have created a School Council for Social Participation.
8. The urban and rural divide is illustrative as, for example, in 190 out of 217 municipalities of the state more than 50% of people 15 years old or older have not finished basic education, and in 19 of them the proportion rises to 75% or more (INEGI, 2011a).
9. Programmes have a specific policy purpose. Many of them were created to respond to targeted groups by allocating more resources in relation to educational disadvantage and programmes have become consolidated permanent structures. These typically require an application by individual schools and involve additional resources for schools. Some examples of programmes are Quality Schools (*Escuelas de Calidad*), Full-time Schools (*Escuelas de Tiempo Completo*), Emergent Programme for the Improvement of Educational Achievement (*Programa Emergente para la Mejora del Logro Educativo*), Safe School (*Escuela Segura*) (OECD, 2010c).

10. Indeed, even within the undersecretary for basic education, there were no clear co-ordination mechanisms among the different units that respond to the levels and programmes until the current government (Proyecto Educativo, 2012).
11. For example, in primary education in Mexico, schools with the largest percentages of teachers who have only middle-school studies or less are *community* and *indigenous* primary schools. Similarly, the proportion of schools with at least one computer for educational use is 0.5% in *community* schools, 23.1% in *indigenous* schools, and 55.7% in *general* schools (OECD, 2011e).
12. Previous reforms had focused on three main areas: a) pedagogical-curricula, in particular on the curriculum, study plans and programmes, materials and student evaluation; b) teachers, including initial and continuous teacher training as well as teacher career and evaluation; and c) school, including its management, teamwork, education project and social participation (Fierro, Tapia and Rojo, 2009; Zorrilla and Barba, 2008).
13. In basic education, there are two Chapters of the SNTE in Puebla: *Sección 23* with 37 531 affiliates and *Sección 51* with 13 257 affiliates (Espinoza, 2008), which jointly represent almost all staff.
14. In 2002 it was decided that pre-schooling would be compulsory for 3-5 year-old children by 2008-09, although compulsory pre-schooling has raised some concerns as the legal obligation may divert scarce resources from secondary education, despite the positive effects on equity and learning (OECD, 2010c). In 2012 the federal government decided that compulsory upper secondary education would be compulsory by 2021.
15. This is an approximate estimation. In Puebla, 1 139 370 5-to-14 year-olds are enrolled in schools according to the 2010 Census (INEGI, 2011a), which compares in thousands to 564 in Finland, 1 187 in Belgium, 1 123 in Portugal and 2 442 in Chile.
16. The *Telesecundarias* system – attended by one out of five students – was created in the 1960s to enhance access to education in rural or isolated areas in Mexico, although it was also expanded to urban areas. Instruction is delivered through specialised television broadcasts as well as printed and digital materials, and is complemented by a facilitator specially trained for this mode of education (Santiago et al, 2012).
17. Although the number of basic education schools has been growing in the past decade, especially at the pre-school and lower secondary levels, since 2000, no new principals have been formally appointed in Mexico for financial reasons. Instead, teachers are “invited” to take office as a “commission”, which refers to positions that are not formally recognised and not paid accordingly. As a consequence, in Puebla, there are only 4 521 principals for over 11 500 basic education schools (Proyecto Educativo, 2012).
18. In fact, most school buildings offer a morning or afternoon shift with separate school leadership and educational staff. The Mexican education system establishes that primary schools must operate at least four hours a day for a minimum of 200 days per school year (800 hours per year), which is lower than the OECD average for this level (838 hours) (Proyecto Educativo, 2012). However, in lower secondary schools, Mexican students receive the highest number of instruction hours among OECD countries, with 3 500 hours during three years, about 26% more than the OECD average of 2 767 hours. A national programme aims to provide full-time schooling,

but only 85 schools in Puebla participated in this programme in the 2011-12 school year (Proyecto Educativo, 2012).

19. In PISA 2009, 77% of school principals reported that a minority or few parents put pressure on schools to achieve high academic standards (OECD, 2010d).
20. Australia and Canada provide good examples of intergovernmental mechanisms in complex federal systems. Australia, in particular, has developed an institutional framework consisting of various bodies that have different mandates and constituencies, but that all work together to design, implement and sustain reform across a number of domains (OECD, 2010e). While the previous mechanisms were mainly driven by the Commonwealth, with limited opportunity for input from the states, the COAG meetings have been characterised by a high degree of collaborative effort by state, territory and federal political leadership, as well as agency officials.
21. In Canada, for example, issues of collective bargaining are separated from professional ones. Teachers and their representatives collaborate effectively with ministry staff in self-governing bodies to govern issues of entry, discipline and the professional development of teachers (OECD, 2011b).

Annex. 1. A1. Structure of the Mexican education system (2011)



Note: The structure was developed by the INES Network for the Collection and Adjudication of System-level Descriptive Information on Educational Structures, Policies and Practices.

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Chapter 2.

Strengthening schools and student learning in Puebla

Significant progress has been made in expanding access and raising student performance in basic education, greater attention is now being placed on students' performance and several recent initiatives could have an impact with further development and implementation. However, school failure remains a challenge: only three of four students who enter primary are expected to complete lower secondary education. Learning time is short, the curriculum lacks a local focus and is often narrowed down to tests, and assessment practices do not fully focus on improvement. Many schools operate under very challenging conditions, with scarce resources and weak support, particularly in the case of multi-grade schools.

To strengthen schools and student learning, this chapter looks into policies to:

- ▶ *Provide high-quality and supportive learning experiences, particularly in early years and multi-grade schools*
- ▶ *Further develop and exploit the potential of early warning systems and the use of assessments for learning*
- ▶ *Foster a more efficient distribution of resources*
- ▶ *Restructure school supervision, support and evaluation systems*

Over recent decades Puebla has made great progress in extending the provision of basic education. Some policy initiatives have started having a positive impact on education services and student learning. However, considerable challenges remain in terms of the quality, equity, governance and management of basic education services. Some of these challenges relate particularly to the state while others are shared across Mexico.

The Secretariat of Public Education of the state of Puebla (Secretaría de Educación del Estado de Puebla, SEP-Puebla hereafter) has declared its intention to make concerted efforts to create a long term plan of high-quality educational provision. This objective seems to be shared among key stakeholders and personnel within the state education system. Such an alignment is a key fundamental prerequisite to change the current situation and achieve high standards (OECD, 2010a).

Schools, pupils, teachers

The state of Puebla provides basic education for more than 1.4 million students: 260 000 in pre-school, 840 000 in primary school and 320 000 in the various types of lower secondary establishments. About 10% of all students attend private schools and, since these are mainly located in urban areas, the state is responsible for nearly all education services in remote rural areas. In the school year 2010-11, Puebla employed 58 917 teachers and 6 591 school principals and other education leaders in 11 575 schools. There are schools for indigenous students whose mother tongue is not Spanish (11.5% of the population in Puebla speak an indigenous language). Most students with special education needs attend mainstream schools, although there are a number of special schools for those with profound learning or physical needs (Proyecto Educativo, 2012).

Enrolment levels are relatively high: 86% of pre-school age children, 98% of children of primary-school age, and 92% of students of lower secondary school age are in education. Completion of basic education is still a challenge: only 77 % of the students who entered primary in 2012 are expected to finish basic education (Proyecto Educativo, 2012).

Around 44% of schools in primary education are *multigrado* in which one teacher teaches students of various ages (INEE, 2010). *Multigrado* schools were originally created as a temporary means to serve students in specific conditions; however, over time they became a standard solution to increase coverage (Proyecto Educativo, 2012). Lower secondary students attend a general education school, a general technical school, or a *telesecundaria*.¹ Only 70% of students who pursue this latter type of secondary education complete it. More than 67 000 students in Puebla attend school in one of 32 *Centros Escolares*. These are learning centres which group all basic education levels under one management structure and also provide upper secondary education.

The schooling structure and the learning environment

As in the other Mexican States, basic schooling in Puebla consists of three years of pre-school, six years of primary school and three years of lower secondary education. Students attend school either in the morning or in the afternoon. Afternoon schools tend to have higher percentages of students from low income families and lower learning outcomes, such as higher dropout, repetition and coverage rates (Cárdenas Denham, 2011). While the compulsory instruction time is above the OECD average,² the effective instruction time may be lower as 70% of school principals in Mexico report extensive absenteeism and late arrival of teachers as factors that hinder instruction and reduce the

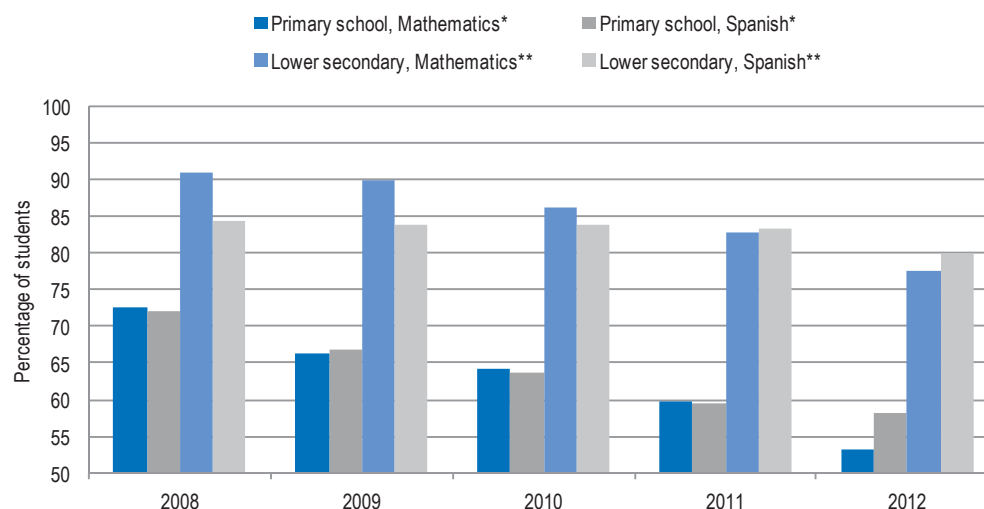
quality of teaching (OECD 2009). The federal Full-Time Schools Programme was created in 2007 and introduced in 85 basic education schools in Puebla with the aim of extending the school day to eight hours. While benefits are claimed, this programme has not been evaluated yet. Moreover, the student-teacher ratios are higher than the OECD on average, but the ratios in Puebla are below the national average with the exception of primary schools.³

Basic education schools vary considerably in the quality of their infrastructure, suitability of educational spaces and options for flexible approaches to learning. The provision and quality of educational resources, including basic furniture, also varies and in some instances is unsatisfactory. Classrooms often are overcrowded and lack the visual stimulation of posters and learning charts. Students rarely have access to shared educational resources which could support their learning either within the classroom (*i.e.*, computers, library books) or outside (sport facilities, playgrounds) (see Chapter 5).

The curriculum in basic education schools is set at the federal level. In 2004, Mexico put in place an extensive reform programme, the Comprehensive Reform of Basic Education (*Reforma Integral de la Educación Básica*, RIEB) to ensure a coherent and connected the curriculum across the different levels of education and to improve student achievement. The Reform also asked teachers to use a competence-based, rather than a knowledge-based, approach to learning.⁴ The Reform began with Pre-school Education (*Reforma de la Educación Preescolar*), continued in 2006 with Lower Secondary Education Reform (*Reforma de la Educación Secundaria*) and culminated in 2009 with Primary Education Reform (*Reforma de la Educación Primaria*). The impact of the RIEB on teaching approaches, providing more autonomy and responsibility to students, varying the ways of organising their learning, and using appropriate assessment strategies, has not been evaluated yet.

Performance data

Student performance in Puebla is below the national average, but has improved between 2008 and 2012, most notably in mathematics for both primary and lower secondary students (see Figure 2.1). ENLACE (National Assessment of Academic Achievement in Schools) is the main measure of students' performance in Spanish, mathematics and a third subject that varies each year. This test designed at the federal Secretariat of Public Education (*Secretaría de Educación Pública*, federal-SEP hereafter) level and administered at the state level to all students from the third grade (mid-primary) to the ninth grade (end of lower secondary). Performance is graded as “insufficient”, “basic”, “good” or “excellent”.

Figure 2.1. Percentage of students in Puebla with "insufficient" or "basic" results in ENLACE

Note: * 3rd to 6th grades; ** 7th to 9th grades

Source: ENLACE, SEP (Evaluación Nacional de Logro Académico en Centros Escolares, Secretaría de Educación Pública), www.enlace.sep.gob.mx.

StatLink  <http://dx.doi.org/10.1787/888932830198>

In PISA 2009, the mean score was 38 points higher than in 2003- the equivalent of nearly one full year of formal schooling- and above the national 25 score points increase. Puebla ranks eighth of all 32 states and above the national average in student performance, which is a remarkable achievement considering that the state ranks 28th in socio-economic status (see Table 2.1) (Proyecto Educativo, 2012).

Table 2.1. Results of Puebla in PISA 2003-2009

	State	Score 2003	Score 2009	Variation
1	Distrito Federal	455	469	14
2	Nuevo León	416	450	34
3	Chihuahua	422	449	27
4	Aguascalientes	441	449	8
5	State of Mexico	403	440	37
6	Jalisco	434	438	4
7	Colima	461	436	-25
8	Puebla	395	433	38
	NATIONAL	400	425	25
30	Tabasco	346	391	45
31	Guerrero	362	374	12
32	Chiapas	357	364	7

Source: (INEE) (2010), *México en PISA 2009*, INEE, Mexico, D.F.

StatLink  <http://dx.doi.org/10.1787/888932830350>

While 19% of students had repeated a year at the end of primary school (INEE, 2010), grade repetition rates in primary education have decreased from 6.8 % in 2000-01

to 3% in 2010-11 (Proyecto Educativo, 2012). At the age of 15, 21.5% of students in Mexico report that they have repeated a grade (OECD, 2012b). Recently, some legal restrictions have been introduced in order to decrease grade repetition rates (Proyecto Educativo, 2012).

School governance and support for schools, school principals and teachers

In Puebla, and in Mexico in general, schools are managed by a school principal, or a teacher “commissioned” to undertake this function (*comisionado*). The work of the school principal or equivalent is largely administrative and a significant portion of their time is devoted to managing the various federal education programmes in which the school is involved (OECD, 2010a). This leaves little time for other leadership roles, such as stimulating improvements in learning and teaching, and might not compensate the additional funding received. Puebla authorities have taken steps to reduce the number of programmes in schools and have engaged in a roll-out of the best leadership and management features of the *Programa Escuelas de Calidad (PEC)* to all school principals.

There is a long established tradition of oversight of school work by supervisors and other personnel external to the school. Each state has a system of supervision of schools, structured according to geographical areas at two levels: sectors (*sectores*) and zones (*zonas*). Sectors consist of a number of zones (about 10) and each zone comprises a number of schools (typically between 8 and 20 schools). Supervisors (or Inspectors, as they are commonly called at the lower secondary level) take responsibility for each zone (and the respective schools) and report to Heads of Sector (*Jefes de Sector*, sometimes also called General Supervisors or General Inspectors). Supervisors function as the direct link between schools and educational authorities (UNESCO-IBE, 2010). There are no explicit job descriptions and few support, accountability and evaluation arrangements for these roles, even though criteria for eligibility to the posts are included in the teacher career programme (see Chapter 3 and Santiago *et al.*, 2012). However, to date the role of supervisors has been largely associated with ensuring schools’ compliance with regulations and other administrative tasks. Their capacity to engage in school evaluations in ways which may promote school improvement as well as resulting in accurate evaluation of the quality of a school’s work is limited under present conditions (Santiago *et al.*, 2012).

More recently administrative support for schools is also available through the system of 19 development centres (*Coordinaciones Regionales de Desarrollo Educativo – CORDEs*) that were set up some 20 years ago as a means to decentralise administrative and legal services. The CORDEs aim at becoming local administrative hubs, bringing some education services closer to the communities they serve, which is particularly important given the size of the state of Puebla and the dispersed nature of a large part of the populace.

Parental and community involvement in education

Considerable efforts are made in Puebla to engage and involve parents in the education of their children. The Parents’ Associations (*Asociaciones de Padres de Familia*) operates at state, local and school levels. Their role is to help parents engage with their children’s schools. Schools are also required to have a social participation council (*Consejo de Participacion Social*), which is intended to give parents, other members of the community, and sometimes students a voice in the school’s planning and

improvement. The General Education Law provides these councils with some responsibilities but these are not fully implemented as further instruments have not yet been provided (Santiago *et al.*, 2012).

Priorities and opportunities for the years ahead

Some of the changes needed to improve Puebla's education system are in the hands of the federal government, but the scope for improvement at the state level is substantial and Puebla can also put forward reforms. Success in the implementation depends to a great extent on the quality of teachers, school leaders and supervisors, which are analysed in Chapter 3. To achieve long-term and sustainable improvements in schools and student achievement, the state of Puebla could begin by focusing on four interrelated areas:

- *Provide high-quality and supportive learning experiences for all:* Make classroom experiences, learning time and curriculum more relevant for students, particularly focusing on the early years and multi-grade schools.
- *Track and support each student:* Follow students throughout their education, develop early warning systems that focus on students' learning, and use formative assessments to align subsequent support.
- *Foster a more efficient distribution of resources:* foster learning communities, and consider alternative ways of distributing resources and organising schools, particularly in remote areas.
- *Restructure supervision, support and evaluation of schools:* Improve the system of school supervision and evaluation, transfer administrative tasks to existing and new professional administrators and create a specialised evaluation agency.

Recommendation 1: Provide high-quality and supportive learning experiences for all, particularly focusing on early years and multi-grade schools

The Puebla context

The current demographic changes suggest a greater focus in upper secondary education, but Puebla should also reinforce and consolidate pre-school and the first years of primary education to ensure a solid educational foundation on which young learners can build. Moreover, current performance and non-completion rates in secondary levels indicate that many Puebla students may enter secondary education already having substantial learning difficulties, particularly - but not exclusively - in literacy and numeracy (OECD, 2010a).

Although the Reform of Basic Education is in its very early days, teachers and school leaders show a shift in thinking, looking critically at the types of tasks they set for pupils and moving towards a more problem-solving approach (OECD 2010a, 2011a; Santiago *et al.* 2012). However, there are specific barriers to achieve the goals of the new curriculum and improve learning in schools and classrooms which will need the attention of educational leaders and teachers. Some of these, mainly centred on learning time, curriculum implementation and pedagogy in the classroom, are outlined below.

Short school days and issues such as poor teacher quality, absenteeism or late arrival at their school hinder the effectiveness of the working hours (OECD, 2009). This reduces the opportunities open to teachers to revise and recycle previous work, a key strategy in scaffolding students' learning. Given the pressure to cover all aspects of the curriculum, teachers understandably find it difficult to trust that time spent on formative assessment or project-based learning activities would bring a positive return. This is particularly challenging in *multi-grade* schools, where students with lower socio-economic background are concentrated and peer and external support structures for teachers are scarcer.

Despite the aims of the RIEB, the curriculum delivered in too many schools may be insufficiently broad. This issue derives from a number of factors, such as the pressure on teachers to 'cover' all the topics set down, the pressure for students to perform well in the national assessments and on bi-monthly tests and the subsequent doubt that time spent on certain curricular elements really is time well spent. Important learning elements, such as those associated with music, sports, arts, enterprise and environmental issues, are under-emphasised.

The curriculum seems to have little, if any, local focus. The experiences that children bring from their home background to the formal learning context of the school are not valued, which is particularly detrimental to indigenous children and those with few experiences outside their community (*i.e.* without internet access). Most teachers do not yet have the capacity to adapt the curriculum to children's contexts while still fulfilling the demands of the national requirements. In addition, the ENLACE test do not always take into account the differing contexts of the indigenous populations, although the federal SEP is currently exploring alternatives.

In Puebla, and other states of Mexico, work is only beginning in ensuring smooth transitions between pre-school and primary and primary and lower secondary settings. The new curriculum, if duly implemented offers a good start. Puebla lacks a state-wide policy to guide schools on how best to support students particularly in times of transition and, in practice, there appear to be few support strategies for students. The consequences

of such matters may be that students fail to achieve what they are capable of, loose motivation for schooling, find themselves having to repeat a year or drop out. Almost half the schools in Puebla are multi-grade and most of these are challenging working and learning environments for teachers and students.

In 2009 the federal SEP developed the *Programa para la Mejora del Logro Educativo* (Programme to Improve Academic Achievement, PEMLE), which in 2011 became the *Estrategia Integral para la Mejora del Logro Educativo* (EIMLE). Around 500 schools participate in EIMLE in Puebla. While the EIMLE has an ambitious programme⁵, does not seem to be well articulated yet with other state and federal initiatives and its implementation is challenging.

In Puebla, as in other states in Mexico, there are a number of mechanisms to promote links between parents and their children's school. These include social partnership councils and associations of parents. In 2012, 92.6% of schools in basic, initial and special education in Puebla have integrated their School Council of Social Participation, the highest percentage in Mexico only after Tabasco (96.3%) and Hidalgo (93.4%) (SEP and CONAPASE, 2012).

The international context

Many studies show that learning problems and difficulties among students are exacerbated, and often initiated by a poor learning experience during the early years. If not addressed, learning challenges and poor skills are compounded year on year, causing demotivation, often behavioural issues, alienation and eventually leading, in the extreme cases, to dropping out of school (Heckman, 2011; OECD, 2012b). The fundamentals of literacy and numeracy are laid in pre-school and the very first years of primary education, often through non-formal learning situations and especially in playful contexts. Investing in quality education provision during the early years of all students, and in particular in children from disadvantaged backgrounds, reinforces equity in the system and efficiency of financial resources (Cunha and Heckman, 2007, 2008; OECD, 2012b; Woessman, 2008).

The quality of instruction has far greater impact on learning outcomes than the number of instruction hours (OECD, 2005; OECD 2010). At this point in the reform trajectory of Mexico, investments in the quality of teacher recruitment and continued teacher development can yield greater benefits than extending the school day (see Chapter 3). Moreover, increasing the learning time can lead to the recruitment of more poorly qualified teachers and, therefore, risks becoming a long-term major liability.

Research on out-of-school academic and social activities as well as summer school programmes show positive effects on academic performance and motivation (Lauer *et al.*, 2006; Cooper *et al.*, 2000).⁶ Additional time can be particularly beneficial for disadvantaged students, who may not have a supportive environment at home (OECD, 2012b). To this end, countries have considered reconfiguration of the organisation of learning time. Some countries have introduced after-school and holiday programmes, study support or breakfast clubs (Mahoney, Lord and Carryl, 2005; MacBeath *et al.*, 2005) particularly targeting at disadvantaged students as they are less likely to participate in these activities (Horgan, 2009). Schools' learning time can also be modified, changing the number of hours per day and/or days per week. In Spain for example, since 2006, some schools can offer students more instruction time, and/or modify the learning time to better serve their students (IFIIE, 2011).

Mixed age grouping is commonly found in 'small' pre-school learning or primary learning environments, such as multi-grade schools, because there are insufficient teachers and/or finances available to organise the range of year groups into single-grade classes. Although mixed age groups are generally created out of administrative necessity, in some systems well structured mixed age grouping may be formed for pedagogical reasons (Gray, 2008).⁷ Many studies have also shown the potential of multi-grade teaching programmes (OECD, 2008), such as Colombia's *Escuela Nueva* (see Box 2.1), Guatemala's *Nueva Escuela Unitaria*, and Chile's *MECE-Rural* in the region. In particular, the *Escuela Nueva*, which encourages new kinds of instruction (see Box 2.2) has been positively reviewed (McEwan, 2008; Psacharopoulos, Rojas and Velez, 1992), it has been introduced in many other countries and its under consideration in Puebla.

Box 2.1. What is Escuela Nueva?

Escuela Nueva is an educational model designed in Colombia in the 1970's to improve the quality and effectiveness of the schools in the country. The program was initially aimed at rural multi-grade schools where one or two teachers simultaneously taught all of the different grades. Schools were typically isolated and in great need of support.

The learning model benefits children, teachers, administrators, families, and the community through four interrelated and structured components: the curriculum and classroom, community, training, and management and evaluations. Escuela Nueva promotes a classroom environment where students actively learn, participate, and collaborate with simple and structured strategies. Fundación Escuela Nueva also works to strengthen the relationship between the school and community. It is a flexible model tailored to meet the needs of each individual child, allowing students to complete units and advance to higher grade levels at their own pace.

Source: Fundación Escuela Nueva, website: www.escuelanueva.org/portal/en/escuela-nueva-model.html.

Greater parental involvement in education encourages more positive attitudes towards school, improves homework habits, reduces absenteeism, disengagement and dropout and enhances academic achievement. Children are more likely to learn when they have structured home environments with clear expectations about learning but adapted to child specific needs and personalities (Schneider *et al.*, in Dumont, Istance and Benavides, 2010).⁸ Parental engagement in education mostly happens through two vectors (OECD, 2010): the support parents give to their children at home, such as discussing school activities and helping with homework, and in-school activities, such as taking part in parent-school meetings and other school activities (Nusche, 2009; Dumont, Istance and Benavides, 2010).

Strategies for action

1A. Explore additional ways of organising learning time and support multi-grade schools

Puebla should explore strategies with a view to compensating for short school days, late school hours (for those in the afternoon shift) and low quality schooling, particularly in multi-grade schools. Potentially fruitful ways for governments to improve the learning experiences are: facilitating a better use of the existing learning time, providing more

time for learning and encouraging more flexible pedagogy arrangements in schools (the latest is analysed in Recommendation 1B).

Full Day School Programme, out-of-school programmes and summer schools

Puebla schools' participation in the federal Full Day School Programme (*Escuelas de Tiempo Completo*) could contribute to shifting the public's and teachers' perceptions of what a school day should look like. However, extending the school day is expensive and available evidence is insufficient to analyse the impact of this initiative in student learning and motivation. Therefore, Puebla may wish to undertake a rigorous cost-effectiveness study based on current pilot schools before considering the expansion of the programme state-wide. Alternative options, such as extending the school day by only 1 or 2 hours, may also be considered and piloted.

When possible, students should also be encouraged to spend more time at school for learning, extra-curricular or leisure activities, particularly in the early years. Evidence shows that participation in school clubs and activity circles can promote better relationships between teachers and students, with both groups earning more respect in a less formal atmosphere. Under certain circumstances, some schools can be reorganised to extend learning time by introducing remedial classes before, after school or on Saturday (OECD 2012b). If teachers are not available to organise activities, then parents or ATPs might be willing to get more involved. Setting aside more time for learning after-school will be beneficial for Puebla students (particularly those in remote areas) who must help in family work, and perhaps even undertake economic activities, and it could foster more positive attitudes towards schooling. Also, well-structured learning programmes during summer and other holiday periods could be beneficial. These programmes could be extended to other children, adolescents and/or adults from the community.

Multi-grade and other disadvantaged schools

A state-wide policy to support multi-grade schools, their teachers, leaders and students should be designed as half of the primary schools in Puebla are multi-grade. This strategy could be developed as part of the EIMLE initiative and it should aim at providing students with quality education during the few hours that they spend in school. The strategy should be holistic, provide teachers and leaders with special training and instructional materials for multi-grade schools and classes, and encourage new kinds of instruction and curriculum adaptation. To this end, some *Normales* can be turned into specialised centres for preparing teachers, leaders and supervisors working in these schools (see Recommendation 2A in Chapter 3). Also, adequate financial and career progression incentives should be developed for staff working in multi-grade schools.

Puebla could continue exploring initiatives such as the adaptation of the *Escuela Nueva* model to the Puebla context. The impact of the programme should be evaluated (e.g. in terms of student achievement, dropout rates and other important variables like teacher motivation or community involvement) in order to inform decisions on sustaining and/or expanding the programme across the state.

The state could consider piloting a remedial teaching programme in schools with low performance and enrolment and high dropout rates, which may be the case of some multi-grade schools. The remedial teacher would support a cluster of schools and could be part of the expert learning teams suggested on Recommendation 3A. Establishing and applying strict criteria to select remedial teachers, ATPs and other suitable individuals, providing them with high-quality training and additional support and evaluating them

continuously is critical for the success of the programme. In several high-performing education systems, such as Finland, remedial teaching is an effective strategy for students who need additional learning support.

1B. Ensure a relevant curriculum to all students and encourage flexible and innovative ways of learning

The national reform of the basic education curriculum is a significant step towards broadening curriculum at all stages. However, given the way in which current testing, assessment practices and outcomes are used (e.g. as a large component of the *Evaluación Universal* and *Carrera Magisterial*), teachers inevitably tend to teach towards the test, with a consequent narrowing the curriculum and teaching approaches (Santiago *et al.*, 2012). Unless the influence of ENLACE tests is reduced, the chances are limited for the introduction of a relevant curriculum (Santiago *et al.*, 2012). Therefore Puebla needs to develop policies that encourage and facilitate teachers' implementation of *a truly broad curriculum in the classroom* to impact student learning.

Although some work on adapting the curriculum and assessments appears to be happening at federal level, SEP-Puebla can take the lead in the construction of curricular elements and topics as well as associated assessments. These should take account of, and value of, the indigenous contexts from which they are drawn and on which they build. This is particularly relevant since the central direction of curricular content and the associated ENLACE assessments contribute towards arrangements and learning contexts which at times are foreign to groups of students, and particularly those from indigenous backgrounds.

Puebla teachers should be encouraged to use flexible pedagogies and innovative ways to organise learning for a more effective implementation of the new curricula. To this end, Puebla can consider:

- *Allowing and encouraging schools to explore different time and staff arrangements.* For example, when necessary allow longer blocks of time to be devoted to certain areas of the curriculum such as mathematics or history but also the arts, music, drama, entrepreneurial studies and so on.
- *Encouraging schools to use staff expertise in a more flexible way in order to provide students with more relevant learning experiences.* A teacher may have strengths in language, for example, while another is more comfortable with science or music.
- *Exploring innovative team teaching possibilities:* two teachers occasionally team teaching, or dividing their classes into two large ability groups for remedial or extension work, one taken by each teacher for a limited time-frame during the day (See Box 2.2).
- *Introducing in schools some form of integrated studies or project-based pedagogic approaches aligning different disciplines.* For instance education on “entrepreneurship”, or “sustainability and environmental protection” would require students to apply their skills and learning in literacy and numeracy, across varied contexts.
- *Exploring the potential of providing students in the last year of lower secondary with a short, well-structured work experience* – where such is practicable – to improve

motivation and prepare in more practical ways for upper secondary education (see Recommendation 3A in Chapter 5).

- In the long-term, setting up a number of lower secondary schools which offer extended exposure to such subjects as *music or sport to motivate disaffected students*.

Many of these moves would imply a school-wide rather than classroom-based approach to the curriculum and would require both leadership and creativity from school principals and teachers alike. As in Germany and Chile (see Box 2.2), exposure to a broader curriculum should be more the norm than the consequence of the involvement in particular programmes or randomness of individual teachers expertise.

Box 2.2. Selected innovations in Germany and Chile

Jenaplan-Schule, Jena, Thuringia, Germany: This learning environment includes kindergarten, primary school, and different levels of secondary education for learners aged 3 to 20. Learners with minor physical or learning difficulties are integrated into mixed-age classes with students who have other difficulties in school. Teachers work in teams, both for teaching and peer coaching. Learners work partly in cross-grade and partly in homogeneous age groups, with a strong emphasis on open learning and interdisciplinary project work that is organised by week. Subjects change every 3 to 4 weeks. Written reports replace or supplement traditional grading, and learners' peer- and self-assessment is emphasised. Monthly roundtable meetings give parents the opportunity to discuss group-specific problems with teachers and regular consultations between parents and teachers help to support the child's individual development.

Colegio Karol Cardenal de Cracovia, Santiago, Chile: This state-subsidised private elementary school in a low-income community with high rates of unemployment and drug use caters to students from kindergarten to eighth grade. It is organised around the notion of a "state-school" in order to teach its students to function well in a democratic society. Classes represent communities that have an administration and departments, there is a school constitution regulating behaviour, a (symbolic) ministry of justice, a court, elections for student president, and students can participate in the school government. The school has its own incentive system, in which the school currency can be exchanged for rewards. These innovations were initiated by the headmaster, who wanted to create an environment of strong and caring relationships to help all students discover their own potential. Scores on national standardised tests have improved significantly since then.

Source: OECD Innovative Learning Environments Inventory database, www.oecd.org/edu/ceri/inventorycases.htm.

1C. Foster the development of a holistic strategy to support students in a more structured way in schools

The concept of focused support for students has not been greatly developed in Pueblan schools yet. Undoubtedly many teachers and school principals help their students as much as they can, but this may not be enough to improve student learning and motivation. Puebla authorities could facilitate developing in schools a specific strategy for each student to articulate the support, track them along and allow them to feel involved. It should articulate in-school and in-class support strategies, track students' progress, smooth their transitions and raise their expectations.

Puebla should consider encouraging schools to identify a clear reference staff person for students, who will take the lead in articulating an individual support strategy, allow

students to authentically believe that ‘someone knows me, someone can help me, someone cares’ and ensure that they aim at performing at the highest possible levels. The simplest strategy is for each teacher to take on some responsibility for getting to know a group of students, whether taught by that teacher or not.

A more sophisticated arrangement would be to release teaching time of some individual teachers – this could be a commissioned teachers or specially appointed teachers – to take on oversight of a group of students in their academic, personal and vocational progress. This ‘tutor group’ approach is especially valuable in lower secondary schools where pupils have a different teacher for each subjects and thus no clear reference to turn to in case of difficulty. An extension of such an arrangement would be the adoption of a system of ‘houses’ which divide the school population under the personal and social development care of such teachers.⁹

Finally, Puebla could also explore ways to allow secondary students, but also those in the later stages of primary, to express their views on their own learning process and on their school experiences as a whole. Students will tend to feel more supported, engaged and responsible, and to develop important leadership skills and experience. This can range from the simplest form of teachers and the class as a whole ‘listening’ to students to student councils with elected representatives as in Scandinavian countries, the Netherlands or the United Kingdom. For example, Puebla could create a formal forum for secondary students to discuss issues that affect them and education initiatives, which could be related to the *Consejo de Educación del Estado de Puebla* (Council of Education of the State of Puebla).

1D. Encourage schools to strengthen links with all parents

Many parents in Puebla, and in Mexico as a whole, find it difficult to engage with their child’s school. A number of steps will have to be taken to lay the foundations for enhanced cooperation. In the first instance, it would be important to design a state-wide policy that shows the full extent of current and proposed links between parents and their schools. This would include explaining the role and opportunities provided by the *Consejos Escolares de Participación Social*, the *Asociaciones de Padres de Familia* and other new or existing initiatives, which can be inspired by more ambitious initiatives to reach families of current and potential low performing students in other countries (See Box 2.3).

Schools should therefore be advised and supported to develop their own policies for attracting parents, and particularly the parents of young learners, to engage in activities. Some of these activities would be intended to familiarise parents with schooling, in general, and others would involve more “hands-on” engagement: (i) reading and working with their child at home, or offering to work with students in extra-curricular contexts; (ii) attending events that provide information on learning and the curriculum at their child’s education level and having regular discussions with their child’s teacher relating to their child’s progress; (iii) looking at displays of students’ work, observing or joining in musical or sporting events; (iv) seeking to engage in requesting particular services, such as cleaning or cooking or helping with resources; (v) reading alongside their child in a class context.

Also, schools should invite parents into the classroom to learn how to support their child and even to learn alongside their child, which could also be an effective way of tackling adult illiteracy. Family learning is a powerful tool that can begin to alleviate

educational disadvantage, promote socio-economic resilience, and foster positive attitudes towards lifelong learning. In Puebla, many young people are obliged to work after or before school to support their family. Given this reality, the work context could be used to show how skills learned in school can be applied outside of school.

Box 2.3. Reaching parents and communities in France, Ireland, the Netherlands, and Spain

In France, after being trialed in one school district (Academie de Creteil), the “parents’ toolbox” (“la mallette des parents”) was introduced in 1 300 lower secondary schools in September 2011. Parents receive a DVD at the beginning of the school year with information on their children’s schooling and are invited to participate in three meetings at the school during the school year, on topics such as school organisation, helping with homework and sleeping patterns. The scheme aims to increase links between school and parents, and to ensure more continuity in the child’s learning. In its early stages it has achieved very positive outcomes for students, especially in terms of absenteeism.

Ireland has home school community liaison coordinators that organise locally based activities to encourage greater contact between parents, teachers and local voluntary and statutory groups to tackle issues in the community that impinge on learning, with a particular focus on disadvantaged ones.

In the Netherlands specific initiatives are devoted to parents from migrant groups, who are generally more difficult to reach and less involved in their children’s education, such as an Ethnic Minority Parents’ Platform, home visits by teachers, a room for parents in the school, courses for parents, and parent information points in the school. Many (primary) schools with a high proportion of migrant pupils have developed a policy and the municipality gives support for parental initiatives and more information for parents.

In Jacint Verdaguer, Catalonia, Spain: There are monthly meetings for the coordination of the management team and Parents’ Association and families participate in school workshops, trips, traditional organise festivals, become class representatives to improve relationships and mediate, and follow their childrens’ attitudes ‘information sheet’. Parental involvement and commitments of the basic triangle school-students-families are specified in a contract signed by the three parties at the beginning of each year.

Sources: Moisan, C. (2011), « Comment en finir avec l’échec scolaire: les mesures efficaces », Projet de rapport national de base de la France ; Akkerman, Y., *et al.* (2011), *Overcoming School Failure: Policies that Work*, Background Report for the Netherlands, Ministry of Education, Culture and Science, Den Haag; Irish Ministry of Education and Skills (forthcoming), *Overcoming School Failure: Policies that Work*, National Report Ireland, www.oecd.org/edu/equity; OECD Innovative Learning Environments Inventory database, www.oecd.org/edu/cei/inventorycases.htm

Recommendation 2: Further develop and exploit the potential of early warning systems and the use of assessments for learning

The Puebla context

Teachers’ attention in Puebla is now focused on student performance, which is a positive move and aligns Puebla and Mexico with almost all OECD countries. However, the development of an assessment strategy for student learning is at rather an early stage. A formalised assessment system has been introduced with two major components: a set of arrangements for ENLACE tests and a bi-monthly testing and reporting system on

students' performance using the new reporting format (*cartilla de evaluación*).¹⁰ Considerable work has yet to be undertaken to ensure that ENLACE tests are themselves valid and reliable, that they are conceived broadly enough to reflect wider student learning and are relevant enough to be meaningful for all students. Today, in Puebla and in Mexico, test results might be used in ways for which they were not designed. Also, unintended consequences may have arisen in consequence of their application, such as teachers teaching specifically to the tests, rather than the tests serving as evidence of overall learning (Santiago *et al.*, 2012).

ENLACE tests were originally conceived as a diagnostic tool for teachers to use with their students, but current arrangements do not support this purpose. Puebla authorities are exploring to recommend to schools that students should, in addition to completing the official *proforma*, record their test answers separately, so that these responses can be discussed immediately with teachers (Proyecto Educativo, 2012). While this can be a positive step ahead, it still does not allow the tests to serve a truly formative assessment function. In Puebla, and Mexico, a broader and comprehensive set of assessment principles does not exist yet. Moreover, socio-economic or other relevant factors that may influence students' performance results seem not to be sufficiently accounted for and, therefore, benchmarking might be misleading.

While the bi-monthly testing of pupils provides for assessing and reporting on student progress, the system encourages a very limited perception of performance, and is subject to manipulation by teachers to inflate results. The results of the bi-monthly tests are reported in numerical terms, with pupils' work allocated to a mark between 5 and 10. There is little understanding of the meaning of the mark among students, other than the implications of failing a class (which could eventually lead to year repetition) and consideration of the highest mark as excellence that cannot be fostered, which narrows the concept of learning and potential achievement (Santiago *et al.*, 2012). The numerical marking approach leaves little room for more formative approaches and, even if Puebla teachers tend to believe that they are engaging in formative assessment, in the Review visit it was observed that they are not.

Recognising the need to follow students through their educational journey, the Puebla authorities have started to develop a management information system to track individual students through the different stages of their schooling within basic education and beyond. A similar approach is conceived for upper secondary students (see Recommendation 3B in Chapter 5). In parallel, the federal-SEP launched recently the National Students, Teacher and School Registry (RNAME), a national initiative aiming at gathering information about students, teachers and schools in the country. In the same vein, in February 2013, the Mexican Congress approved a major education reform that provides for the creation of a national *Sistema de Información y Gestión Educativa* (Education System of Information and Management).

The international context

A growing number of countries across the world use complex data-gathering and analysis systems to contribute to school and system evaluation, indicate priorities for attention and help in the determination of educational priorities. In OECD countries there has been a move away from comparison by the use of raw performance data on its own and towards factoring in some form of contextual indicators.

The well-established information system of the Netherlands has allowed the authorities over a number of years to pinpoint schools at risk and follow them up with

external evaluation to explore the reasons for the risk and provide clear recommendations for improvement. Within the English context, OFSTED engages in comprehensive analyses of data to provide information, some of which relates to value-added measures. The Czech Republic is developing a potentially powerful on-line assessment system which is broad in concept, allows immediate feedback to students and has the capacity to analyse data almost immediately. In Scotland, schools are grouped socio-economically using principal component analysis, allowing some measure of comparison of schools' performance against a similar set of schools as well as against a national measure. In Australia, as part of a nation-wide reform aiming at improving transparency and accountability, the *Myschool system* publishes the results of every school and there is an explicit expectation that all schools will meet a common set of high level school performance and reporting requirements (Santiago *et al.*, 2011)

On student assessment, *formative assessment* has been shown to be highly effective in raising the level of student attainment, increasing equity of student outcomes, and improving students' ability to learn (OECD, 2005; Dumont, Istance and Benavides, 2010). Many successful systems across the world have been built on four pillars to use assessment to promote learning: questioning, peer and self-assessment, marking, and using summative assessment to describe learning and discuss it with students (Black and Wiliam, 1998; William, 2010 in Dumont, Istance and Benavides, 2010).

Most teachers use three types of approaches to what they call formative assessment: (i) indicating to students their mistakes in a test or a task; (ii) asking students to make more effort; and (iii) giving students praise in order to motivate them (Picaroni, 2009; Ravela, 2009a). The most effective formative assessment also involves the development of instruments such as rubrics to make students reflect by themselves about the gap between what they were expected to achieve and their actual performance (Wiggins, 1998; Ravela, 2009a).¹¹ Expanding teachers' repertoire of practices and instruments for formative assessment is not just a matter of sending new materials to schools or loading them onto a website (and expecting teachers to use them). To ensure successful implementation it is crucial to create networks of teachers and develop sustained professional interaction around the new assessment procedures (Ravela, 2010). Designing and introducing good instruments and practices for formative assessment requires collaborative, continuous and interactive work.

Strategies for action

2A. Foster the development of early warning systems and establish mechanisms to track students throughout their education

Puebla authorities should continue and further develop the work on data-gathering, expand their capacity to use data to inform strategies and priorities, and encourage and train teachers to use data to identify priorities in support of student learning. The SIEES (*Sistema Integral de Información Educativa Estatal*) seems to be an excellent start and it should be further developed to provide accurate information on student achievement to individual schools, local authorities and the state itself.

Extending the state's capacity to develop 'fairer' measures of performance – comparing schools within groupings with similar characteristics – would allow authorities and schools to make more nuanced comparisons of student performance and to benchmark performance in additional meaningful ways. Students' socio-economic circumstances should more accurately be factored into the data to reveal the impact of

individual schools and teachers. Such analyses should be used to identify schools and students “at risk” and schools and students that which are merely “coasting” because students’ results are considered “good enough”.

Data analysis should also focus on trends over a number of years as time series are a rich source of information for both internal and external school evaluators. Data could also help determine the individual teacher’s contribution to schools’ performance. However, extracting specific teacher effects in a context of whole-school approaches to learning has been found to be as difficult as determining a single teacher’s value-added contribution to student performance, which the current Mexican arrangements purport to, but do not, do (Santiago *et al.*, 2012)

Any comprehensive management information system should include the possibility of tracking students throughout their schooling, from pre-primary through upper secondary and beyond. Puebla should continue developing its strategy to track students to support them and improve their learning. To avoid duplications and waste of resources, the authorities may wish to develop a single information system that includes all students (see also Recommendation 3B in Chapter 4) and contains or links the information on schools and schools infrastructure (see Recommendation 1B in Chapter 5), while looking for synergies with federal initiatives such as RNAME. In its development and implementation, particular attention should be paid to avoid overburdening schools and school leaders with additional unnecessary administrative work.

As in many countries, the information system should facilitate the use of “traffic lights” (red, amber, green) alerts to direct staff attention to students who are failing to progress or who are regressing in their work. Appropriate remedial action would then be required. Such a system may facilitate the development of strategies at the school level to reduce grade repetition and dropouts and foster the learning of all students. Box 2.4 shows some examples of how schools use information systems to support students and inform parents.

Box 2.4. Examples of online student management information systems

Courtenay Gardens Primary School, Victoria, Australia: All of the assessment tasks and diagnostic testing data are collated on the *Courtenay Gardens Primary School* “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 coordinator 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.

Lakes South Morang P-9 School, Victoria, Australia: At this school 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 ongoing 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.

Box 2.4. Examples of online student management information systems (continued)

Internet Classroom, 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.

Source: OECD Innovative Learning Environments Inventory database, www.oecd.org/edu/ceri/inventorycases.htm.

Also ideally the management information system, apart from serving as an analytical tool, also comes to serve for the community as an accountability tool. An example is France’s system of indicators for the guidance of secondary schools (*Indicateurs de pilotage des établissements du secondaire/IPES*), which has also evolved into a tool for dialogue with the partners of the education system. It is essential that the information produced is presented in a simple way that which lends itself to be analysed by local stakeholders (Sauvageot and Dias da Gracia, 2007).

2B. Introduce a state-wide student assessment policy containing guidelines for teachers and information for students and parents

Puebla could consider developing and disseminating its own policy on student assessment. It should briefly explain the various purposes of assessment and the SEP-Puebla view on how those different purposes should be manifested in all schools and classrooms. It should underline that both diagnostic and summative strategies play a key role in the assessment of learning. It should be easy to read for the targeted audiences and include a strategic summary for decision-makers. Puebla’s student assessment policy should:

- Provide better information to students and parents. The policy should contain a section for students and parents with a brief explanation in accessible language (and in relevant indigenous languages) and encourage parents to contact their child’s school for further information. Schools should also be required to help students and parents understand the use of assessments, tests and examinations, and the qualifications that will be required of their children as they move through the basic education levels and beyond.
- Encourage teachers to use assessments to foster learning, and show how high-quality teaching approaches, supported by valid assessment practices, contribute to successful learning. A state-wide assessment policy should encourage Puebla teachers to understand that all classes are heterogeneous and that teaching approaches should be tailored to meeting the needs of all students. It should also contribute to the adoption of formative assessment practices and to reduce the use of grade repetition as a major support strategy.¹²
- Encourage schools to introduce learning support teachers, who could provide additional support for those most in need and who have fewer chances to receive the teacher’s attention in classes with large numbers of students. There could be a role for teachers’ aides who could become learning support teachers attached to each school who could reinforce, replace teachers whilst on training, liase among the different school actors

and help class teachers.¹³ Some schools may benefit from rearranging their groups distribution to “free up” one or two teachers to play this role or competent ATPs could be formally deployed to play this role, particularly as Puebla seems to have many schools with teachers and ATPs who do not have appropriate equalisation duties.

2C. Reinforce teachers skills on formative assessment techniques and encourage the development of assessments whose frequency and content support learning

The implementation of RIEB presents an opportunity to move forward in fostering a new understanding of assessment in learning among teachers (Santiago *et al.*, 2012; Tamez-Guerra and Martinez-Rizo, 2012). Puebla teachers must be able to use of assessments: to track students’ progress, to provide high-quality summative reports for parents and students, and to support learning. However, teachers will need considerable guidance in the application of appropriate techniques, and organising training in this context, particularly classroom-based practical training, should be a priority for the authorities (see recommendation 3 in Chapter 3).

Puebla should consider establishing a well-rounded assessment system, in which formative tests allow the teacher to diagnose whether learning has occurred and, if not, what specific aspects have prevented learning from taking place. These assessments should test students’ understanding of specific concepts and/or their ability to apply effectively the skills that are being acquired. Based on the results of the tests, students can, for example, be more readily grouped into those who have learned the material and those who require further support. The design of diagnostic tests must be closely linked to the curriculum. Several countries have made important progress in the use of formative assessments for student learning (see Box 2.5).

Box 2.5. Selection of formative assessment techniques

Community of Learners Network: In Niamo, Canada, the education institutions that are part of the Community of Learners Network educators design broad inquiry questions that encompass a range of learning intentions and present them to the students. Background knowledge of relevant topics is developed through direct instruction using varied media 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. 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.

The Traffic lights: Teachers working with the King’s-Medway-Oxfordshire Formative Assessment Project in England created the “traffic light” technique. At points when teachers want to be sure that students understand a concept, they ask students to hold up a green, amber or red sign to indicate whether they understand, think they understand but are not quite sure, or do not understand. They spend more time with students showing amber and red while providing appropriate extension work for those showing green’.

Box 2.5. Selection of formative assessment techniques (continued)

Skills or competency matrices: The Beatenberg Institute in Switzerland, the ImPULS School and the Logdeburg School in Germany have taken similar approaches, by developing ‘skills matrices’ or ‘competence matrices’ which are grids with a list of skills in a subject or field on one axis and a scale of proficiency. These matrices are supporting both students and teachers in the setting of goals, and reflection reflecting on and review of achievements and progress and as such are a valuable tool for increasing student autonomy the self-efficacy of students.

Logs and portfolios: The working journal is the main organisation tool at the Reosch school, 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 Olds 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.

Source : OECD (2005), ‘Formative Assessment: Improving Learning in Secondary Schools’, *Policy Brief*, November 2005; OECD Publishing; OECD Innovative Learning Environments Inventory database, www.oecd.org/edu/ceri/inventorycases.htm.

In the midterm, the core strategy for improving current and future teachers’ skills in assessment should be the implementation of a whole new approach to assessment in teacher education institutions and continuous professional development. During their studies current and future teachers should be assessed, both for formative and summative purposes, in the same way they will be expected to assess their students: using rubrics, complex tasks, marking criteria based on performance levels, explicit expected learning outcomes, and so on. This requires considerable investment in teacher education programmes on how to give feedback and how to assign marks in a criterion-referenced approach (Santiago *et al.*, 2012; see also Chapter 3).

To encourage the use of formative assessments and free-up the necessary time, Puebla should consider reducing the number of bi-monthly summative testing events and reporting episodes to, for instance, a maximum of three per year. Also, the scope of the new *cartilla de evaluación* could be enlarged to include descriptions of student performance, such as an explanation of the meaning of the marks awarded, and use these descriptions to explain student performance to the students themselves, stressing next steps in learning and how their performance may be improved. Numerical marks should eventually be replaced with level descriptions and assessments should be aligned with curricular standards.

As federal authorities consider ways of adapting the reformed curriculum to the needs of learners from indigenous backgrounds, Puebla could take the lead in the design of local curriculum inserts linked to appropriate assessment items for both formative and summative purposes. For example, the introduction of matching diagnostic tests could help scaffold the learning of those at greatest disadvantage, which is key to achieve equity.

Recommendation 3: Foster a more efficient distribution of resources

The Puebla context

As in many OECD countries and most states in Mexico, most schools across Puebla tend to work as single entities and sharing resources is not a common practice. For instance, while about 65% of primary schools (including 83% of indigenous schools) and 43% of lower secondary schools (including 65% of *Telesecundarias*) did not have a library in 2005 (Ruiz Cuéllar, 2007), no common solution has emerged to respond structurally to this rather specific and basic need. In spite of this, Puebla has introduced innovative types of schools, such as the *Centros Escolares*, the *Bachilleratos Digitales* (see Chapter 4) or the *Centros Integrales de Servicios* (Multi-Service Centers, CIS hereafter), which aim at establishing synergies among education levels and/or services within SEP and with other Secretaries. However, these do not provide holistic services to students and its impact has not been evaluated yet. In the case of *Centros Escolares*, which are long established and are oversubscribed, Puebla is currently considering its expansion.

Some initiatives adopted recently have the potential to generate an improving spill-over effect in basic education. For instance, the Under-Secretariat for Planning, Evaluation and Innovation (*Subsecretaría de Planeación, Evaluación e Innovación*) has undertaken an inventory of the various programmes in which schools participate in order to eventually improve the matching to schools and reduce the bureaucratic burden. Participation in the federal Quality Schools Programme (*Programa Escuelas de Calidad*) has been beneficial and Puebla will roll-out of support for leadership, management and school improvement planning to all schools, not only the 3097 schools which are part of the Programme.

The international context

A growing number of countries are devoting resources to integrate services, particularly for very young children and their families. Studies of these approaches generally indicate that they can go some way to redressing an imbalance of equity which arises from the child's family background and the extent to which parents have been fully involved in engaging with their child and developing their learning – through reading to and with them, engaging in play, outdoors and in, providing interesting experiences of the outside world and generally ensuring that they take a full role in their child's education.

The concept of integrating services seems to have originated in the Full Service School approach which emerged in United States in the last decades of the 20th century and was adopted in some other countries as community schools. Although programmes vary considerably, almost all address issues to promote quality in education, such as attention to basic skills, improving parental involvement in schooling and team teaching, together with some provision of health and social services.

In the Netherlands, 'extended schools' (*brede scholen*) mostly support disadvantage students with their problems at school or in their home setting, and offer them additional activities (e.g. culture, sport) and services (e.g., health, social services). The concept of the community school comes from an initiative by local stakeholders such as municipalities, school boards and welfare services and the number is gradually growing across the country (OECD, 2012b).

Strategies for action

3A. Create expert learning teams to support schools, introduce schemes to share learning resources across schools and consider the integration of services

Many schools in Puebla lack both expert personnel to support schools and the kinds of learning resources that can stimulate students. Puebla may want to develop a strategy to consolidate expert learning support teams and deploy them temporarily across regions to respond to school needs. Puebla could centralise some ATPs or teachers, already in the system, to create these peripatetic teams. In the short term, teams could include teaching assistants and/or teachers with special expertise, such as student learning support in art or music, who would be deployed to schools for a week or two as needed. In the longer term, larger and more comprehensive teams might be created, comprising support teachers, teachers with specific specialities, such as sport, arts or sciences, and learning auxiliaries, accompanied by a nutritionist and an educational psychologist. Other specialists could be added according to need and other professionals (*i.e.* counsellors, liaisons for integrated services) could also be considered to provide more holistic support.

Expert learning teams should be locally deployed for shorter or longer stretches of time to basic schools according to prioritised need. Personnel in these teams would work in communities alongside parents and in schools and classrooms alongside class teachers. Particularly they would provide intensive support to those students with learning difficulties and their teachers. Such peripatetic teams might also bring the relevant learning resources with them, which would allow for an equitable sharing of state or municipal resources in times of financial constraint.

Due to the importance of the early years and the limited available resources, a branch of this service could be exclusively specialised on supporting the early years. Another branch of this group could be specialised in supporting multi-grade schools as proposed in Recommendation 1A. Teachers and specialists in such teams may provide teachers at pre-school and the first years of primary and multi-grade schools with practice-based staff development on providing opportunities for children to learn through play and on supporting early literacy and numeracy.

Schemes to share learning resources

In response to the apparent shortages in school libraries and educational materials in many of Puebla's schools, the use of mobile libraries, including not only books, but other materials, such as science or sports equipment, musical instruments, and/ or art supplies, should be considered. Also mobile computer laboratories with Internet access and specialist teachers could be introduced, along the lines of the *Vasconceles* project in the state of Veracruz. Puebla has already some interesting initiatives, such as the *Tráiler de la Ciencia* from the *Consejo de Ciencia y Tecnología del Estado de Puebla*.¹⁴ For the very youngest children, 'story sacks' could be created and lent to families for a few days.

Organisation and management of such strategies for supporting learning should ideally be undertaken locally, in the first instance along state guidelines, but with room for the development of innovative and creative ideas. Expanded CORDEs could be a locus, with an appropriately-qualified manager tasked with leading and developing the strategy for the region in coordination with school leaders. As with all such projects and programmes, evaluation strategies and success criteria should be created alongside the development of the project, with a state-wide perspective and with the clear purpose of

determining impact and value-for-money, reporting to decision-makers at local and state levels and in due course spreading good practice where it is found.

Consider the integration of services

Puebla authorities could look for ways to introduce more integrated support for children and families, giving priority to those from indigenous backgrounds and in remote areas. Education services cannot, on their own, address problems of barriers to learning and the underachievement of young people. When students, particularly the very youngest children, suffer from the influences of extreme poverty, combined in some instances with social isolation, a concerted effort is required among different services to redress the equity balance. For instance, Puebla could encourage CIS directors to suggest ways to optimise their collective resources and propose joint working plans, and link grants to collective results.

3B. Undertake a review of Centros Escolares and consider other groupings of schools

The state should draw on the success of the *Centros Escolares* with a view to exploiting the concept and creating links and synergies among schools to suit different purposes according to local needs. As a first step Puebla may want to undertake a review of the *Centros* in order to identify the benefits, impact and costs of this arrangement. On the basis of such analysis, the state can modernise and expand the use of existing centres where necessary and potentially propose its expansion or the creation of new arrangements.

Other types of groupings of schools can also be explored. Puebla can identify schools across the state where educational provision might be integrated in an all-through school context. In its simplest form and inspired by the *Centro Escolar* management model, basic education schools in remote communities might be placed under a single management structure, in the hands of a well-qualified school leader(s), with shared priorities and development strategies. The potential for sharing of scant resources in these newly centralised schools would allow students to benefit from economies of scale. Such centralised schools, in both remote and urban areas, could be used to provide digital access to all students in the area, until all individual schools are so equipped, and other social services, such as health, nutrition and child-care, could be provided or co-ordinated. Creative ways to share resources and infrastructure with other institutions in the region, as suggested in Recommendation 3C in Chapter 5, could be an output of such a study.

Where practical, lower secondary schools could be linked to local upper secondary establishments or potentially with a *Bachillerato Digital*. The aim would be to ease transitions, improving the exchange of information on pupils, linking aspects of the curriculum and promoting the notion that pupils are tracked and monitored for performance, guidance and development across their educational career.

3C. Rationalise the number of programmes and secure funding for schools, particularly the most disadvantaged ones

Puebla should continue the efforts to rationalise the number of programmes, which amount to over 140 and represent most of the administrative tasks performed by principals and supervisors. While ultimately federal authorities should change the way funds are distributed to schools as well as increase school autonomy and tighten

accountability (see Chapter 1 and 5), in the meanwhile Puebla authorities should continue to explore ways of ensuring that all schools, particularly the disadvantaged ones, receive adequate funding.

In the short run, Puebla should support targeted schools in screening the programmes available that could be more suitable to them and in dealing with bureaucratic procedures throughout the process. The state could use school-level information to identify schools that will benefit from participating in programmes and support these specific schools in gaining access to these programmes. Although this might reduce the inequities associated with distributing resources through programmes, it will not reduce the related bureaucratic burden and inefficiencies.

Puebla could use the inventory of programmes to rationalise and simplify them and to foster a better matching to schools' needs within the federal limitations. The number of programmes could be reduced to one or two and these should be flexible enough to allow schools to choose their specific focus. More flexibility at the school level should be accompanied by a greater leadership and management capacity as well as accountability in schools. The PEC has already laid the ground work towards a single programme and it aims to achieve greater school autonomy and more involvement of parents and school councils, although it would be convenient to refine its methodology and objectives.¹⁵ The EIMLE is another potential programme that can be enlarged and improved.

Eventually, programmes should be replaced by a funding formula linked to the number and ages of pupils, while providing safeguards for small and challenging schools. This has the greatest potential to begin to reduce economic inequities in the provision of education as shown in the Netherlands, Chile or the Montgomery schools in the United States (OECD, 2010a; OECD, 2012b).

Recommendation 4: Restructure school supervision, support and evaluation systems

The Puebla context

Recent initiatives in Puebla are laying the groundwork for the establishment of a much more evidence-based approach to policy formulation than has previously been the norm in Mexico and many individual states. Student tests results provide limited information about schools' performance and few mechanisms exist to effectively evaluate the overall quality of school provision and the value-added provided. Lack of solid evidence can distort and reduce the impact of public intervention (OECD, 2010a).

Some recently-adopted strategies have the potential to be a force for improvement. For example the authorities are increasingly collecting and analysing school-level data, including on student performance. Mechanisms to measure school performance taking into account socio-economic conditions are under consideration but still at a very early stage. In addition, the territorial administrative structure is under reconsideration in order to better serve schools and allow school leaders to focus on evaluation and improvement rather than administrative issues (Proyecto Educativo, 2012). At the national level, the recent decision to reinforce the independence of the INEE is a step ahead to strengthen the evaluation system.

Shifting to a system of school supervision, support and evaluation for improvement is a challenge of sheer magnitude. To start with, overcoming the lack of educational vision among some personnel in leadership roles across the system at all levels, including

supervisors, school principals and teachers, would require some radical changes. Also, a school evaluation system, in the internationally accepted definition, has not been established yet and the current approach to school evaluation does not focus adequately on student outcomes, overall achievements and learning experiences. Mexico has taken some steps, but the recommended self-evaluation materials produced have not been backed by a staff development programme and there is, as yet, no external evaluation system of any note (OECD, 2011a; Santiago *et al.*, 2012). In turn there is no state-wide school evaluation to inform educational policy priorities and the resource allocation to areas of greatest need or impact.

School support strategies tend to be fragmented, of very varied quality and weakly co-ordinated and integrated, with some exceptions. Supervisors are overburdened with administrative duties, in some cases related with their SNTE roles (Proyecto Educativo, 2012). Also, many of them have been more than 40 or even 50 years in service (See Recommendation 4 in Chapter 3) and may prefer to focus on administrative duties as they do not have the knowledge, experience or capacity to support improvement in schools. As a result, the 815 supervisors working in Puebla represent a high-cost service that might not provide sufficient support to educational improvement. In addition, other support personnel (*i.e.* ATPs, superintendents and subject advisers) might not effectively support teachers and school principals.

The international context

To function efficiently and fairly, stimulate improvement and have the capacity to direct resources to areas of greatest need, high performing systems make sound evidence-based judgments about the quality of current educational provision at national or regional level and use that to inform policy and determine priorities (Santiago *et al.* 2012). What is required is a detailed view of the quality of education and the extent of support required, deriving from a reliable summary analysis of the levels of student outcomes and the quality of the learning process across all schools. Otherwise, policy decisions run the risk of being short-term ‘fixes’ which leave schools no better off than previously, and often worse. Research helps in offering a general picture and in pointing to potential improvement pathways, but can only provide an overview of the quality of education.

Many countries have developed their own school evaluation systems and, for example, Scotland has a well-established comprehensive approach to quality improvement (see Box 2.6). Indicators and standards can illustrate quality and form the language of discussion for school self-evaluation (See Chapter 4, Recommendation 1). Also, the development of an effective evaluation and assessment framework involves considerable investment in developing competencies and skills for evaluation and assessment at all levels (Santiago *et al.*, 2012).

Box 2.6. The comprehensive approach to quality improvement in Scotland (United Kingdom)

Scotland has long experience in the development and use of a comprehensive approach to quality improvement in schools and other educational establishments. The approach is based on a number of fundamental principles: a) that parents and the community have a right to be informed about the quality of the school their child attends; b) that improvement is most likely to happen when schools themselves take responsibility for the quality of their work; and c) that there should be a common language through which all players can more readily discuss what quality is and how it might be improved. The Scottish approach considers three main elements:

Schools undertake self-evaluation, using national guidance and ensuring that evaluations of the quality of learning and teaching in the school are laid alongside school performance data and the views of staff, parents and students in the judgment of quality and the decisions about priorities for improvement.

The local authorities – the employers of the teachers and the body responsible for schools and their improvement – undertake a challenge and support role, by which they ensure, through regular contact, that the school's self-evaluation is accurate and the school is improving and taking action where it is not.

An external evaluation system, in which national inspectors of education engage in inspection once every few years which uses the school's self-evaluation as a starting point, verifies its accuracy through first-level evidence which mirrors the school's procedures for self-evaluation and reports objectively on the quality of education across a number of key quantitative and qualitative indicators.

Strategies for action

4A. Redefine supervisor's tasks to focus on student learning and transfer administrative tasks to existing or new professional administrators

In aiming to modernise the supervisory service and ensure that it contributes successfully to supporting schools and eventually to engaging in consistent, transparent and evidence-based school evaluations of high quality, Puebla should consider a threefold strategy to focus the role of supervisors on improvement, select to ensure high-quality and train them.

First, supervisors should move towards supporting improvement and evaluative tasks to support schools teams effectively. In order to create the conditions and space necessary to allow for this change of focus and for support agents to amend the balance of their activities, there should be a separation of the administrative and evaluative roles of supervisors. Consideration should be given to *rebranding the service*, even renaming supervisors to demonstrate the focus of the new function (*education improvement officers*, for example). These tasks and new roles should be clearly defined and reflected in the supervision guide Puebla is currently preparing and in the mid-term be the basis of a set of supervision standards as discussed in Recommendation 1B in Chapter 3.

Also, candidates who meet strict criteria to ensure high-quality should be selected. Puebla authorities should find ways of ensuring that all those in support and challenge roles, which include supervisors, do not stay in post beyond their capacity to fulfil their professional duties and responsibilities to a high level of quality. Supervisors' roles

should be redefined, and recruitment procedures tightened and made more transparent to ensure that only the best educationists with appropriate skills are appointed to the post. In the new service, supervisors should have a promotion and management structure, with performance standards which depend more on the outcomes of their work with schools, evaluated in a variety of ways through one central, cross-sectoral state department or agency. See also Recommendation 4 in Chapter 3.

If the supervisor's role moves towards support, improvement and evaluation, attention will have to be placed on how the administrative requirements of the system are to be filled. In addition to putting forward more efficient and less bureaucratic funding arrangements, Puebla should consider releasing supervisors workload by transferring most administrative tasks to existing or new professional administrators:

- *Transform CORDES into effective administration, resource and staff development hubs to absorb more local administrative tasks.* Some existing supervisors could be reallocated as full-time administrators if they are unable or unwilling to take on the more demanding tasks of a re-envisioned supervisor/education improvement officer role. Most inspection or evaluation agencies across the world have associated teams of personnel whose function is to provide administrative support. In addition, local authorities in many countries engage administrators to support schools and provide guidance on compliance with legislation or at national or local level.
- *Undertake a feasibility study into creating a professional administrator post within schools or groups of schools.* Examples of such arrangements are to be found in other countries, notably in the United Kingdom, where the concept of the school or area 'bursar' is prevalent and releases time for leaders and teachers to focus on the professional duties their jobs entail. Some supervisors might consider reallocating to this high-level administrative position.
- *Revise who could best support schools in key dimensions and clarify the distribution of responsibilities accordingly.* For example, CAPCEE as a source of small, professional teams which could address issues relating to school infrastructure, buildings and maintenance (see Chapter 2).

4B. Introduce evaluation and reporting on quality at school and local levels

Puebla authorities should sustain and extend their recent strategies to see schools as entities which are greater than the sum of the individual teachers working there. Creating strategies to evaluate school performance as a separate notion from teacher performance, such as reporting qualitatively on individual schools, using assessment data and eventually the evidence of learning and teaching observations in a holistic school context, will support the development of joint responsibility for school performance (Santiago *et al.*, 2012). Supervisors' tasks should reinforce the whole-school aspects of their work with schools.

Therefore authorities in Puebla should maintain and expand their strategies to evaluate school performance separately from individual teacher performance, and use assessment data to encourage collective responsibility for school performance. Recent reforms in education in Mexico have focused on the teacher as an individual, but research shows that teachers develop skills and improve their teaching practices by working with their colleagues in school.

Accountability for the quality of educational provision is a concomitant of modern education systems. All levels – school, local and State (and indeed national), require to be able to demonstrate, to themselves and to their communities, that the quality of their provision is as high as it can be, and that the extremely high cost of education services to the public purse is providing a worthwhile return. Schools should be able to assume responsibility for their own development, and every school should be able to demonstrate to itself, its parents, the community and governing authorities how it has used the resources at its disposition, where its strengths lie, and where there is room for improvement.

The notion of self-evaluation has already gained a foothold in the state's work on staff development in management and leadership through the PEC. This idea could be expanded by using self-evaluation materials, such as those already distributed by the federal SEP. In 2010, the federal SEP recommended that state education authorities draw up and implement a strategic plan for using the *System for School Self-evaluation for Quality Management* in all state education establishments. The first steps towards effective self-evaluation lie in appropriate staff development for school principals, other staff, and, ultimately, teachers.

Self-evaluation in individual schools should be complemented by a system of external school evaluations. These should be carried out by competent personnel at the local level in the first instance and be based on a broad set of indicators and standards, going beyond the narrow context of the results of pupils' performances in a specific type of test such as ENLACE to inform schools about the quality of its own self-evaluation and to formulate recommendations for improvement. These reports on individual schools will allow area superintendents to produce a summary report on overall strengths, areas of need and aspects for development and improvement, which could be used for accountability or decision-making purposes. External evaluation systems also facilitate spreading of good practice, such in the case of Victoria in Australia (see Box 2.7).

Box 2.7. School evaluation in Victoria, Australia

Australian states and territories have a variety of school evaluation systems, which derive from their particular circumstances and traditions. There are two main forms of evaluation, school self-evaluation and school external performance review, in a sequence of activities that begins with self-evaluation and proceeds through a planning, reporting and review process which both satisfies external requirements and is an engine of school improvement.

Victoria organises its school improvement process in networks of around 20-25 schools, each network being the responsibility of a network leader who reports to the Regional Director. Planning operates on the basis of a four-year strategic plan at both network and school levels allied to one-year implementation plans and annual reporting to the school community. Principals are responsible for undertaking school self-evaluation which drives the planning process and focuses on the relationship between school practices and student outcomes, while regional network leaders appraise principals against performance targets. The state Government commissions external organisations to undertake reviews.

Box 2.7. School evaluation in Victoria, Australia (continued)

Reviewers are drawn from former principals, officials or academics and must satisfy criteria covering knowledge of the Victorian education environment, expertise in school improvement and data analysis, interpersonal and communication skills and high ethical standards. They are then subject to an accreditation process and must participate in ongoing professional development. The review process, including the quality of reports, is itself subject to evaluation by stakeholders and officials from the Victorian Department of Education and Early Childhood Development.

External school reviews can be one of four, increasingly intensive, types: negotiated; continuous improvement; diagnostic; and extended diagnostic. The nature of the review in any particular school is dictated by an assessment of risk as indicated by evidence of levels of performance. Reviews are designed to go beyond the conclusions of the self-evaluation process to provide a holistic evaluation of a school's performance and capacity to improve. They seek to promote internal accountabilities and see the school and the School Council as the main audience.

Source: Santiago *et al.*, (2011) *OECD Reviews of Evaluation and Assessment in Education: Australia*, OECD Publishing.

4C. Develop a state agency or unit with an evaluation and assessment function

Puebla should consider the creation of a state-level evaluation agency or an evaluation institute to take responsibility for school-level evaluation procedures, including external school evaluation. The state evaluation agency should not simply replicate what INEE already does but should be much more closely involved with the evaluation of individual teachers and schools and provide support to schools in their self-evaluation and internal appraisal activities. State evaluation agencies, modelled on the national INEE model, exist already in other Mexican states such as Chiapas, State of Mexico and Sonora.

Given the dimensions of the Mexican education system, the possibilities for the central level to develop richer evaluation processes are limited and evaluations are likely to be restricted to standardised student assessments and collections of data. The management of education sub-systems by the state authorities offers the potential for closer monitoring of school practices than a fully centralised system would allow, while also providing opportunities to recognise regional realities and constraints. However, state agencies should be inserted in a strategic plan which clarifies the role of each administrative level in the evaluation and assessment framework (Santiago *et al.*, 2012), which should be developed in collaboration between the federal SEP, INEE and SEP-Puebla.

In many systems of education, evaluation agencies serve a counterbalancing audit function in terms of policy direction and help keep the current political administration well-focused on those activities which do contribute positively to improvement within an effective, efficient and economical framework. They also help to make all the processes of education more transparent. The main tasks of the evaluation agency should be to:

- *Report on the quality of education across the state* and engage in specific data analysis, including state-wide student, teacher and school performance, and analysis of assessment information against socio-economic indicators. These reports would then be

used at the local and school levels to identify priorities and staff-development needs (Santiago et al. 2012).

- *Collect information on grade repetition and drop-out rates* or undertake research on such issues as the nature and impact of teacher commissions on student performance, the quality of staff development, and the role and functions of ATPs or subject advisers.
- *Disseminate information.* For example, as most OECD countries with evaluation or inspection agencies, Puebla could consider developing a state-wide education Intranet that would be a repository of evaluations and assessments that is freely accessible to all.

The state evaluation agency could also facilitate the improvement of competencies for the evaluation of state educational authorities and staff in their supervision structures. In collaboration with higher education institutions and teacher education programmes, professional development opportunities should be provided for educational administration staff at different levels, including the state authorities, municipalities, heads of sector and supervisors. The development of an effective evaluation and assessment framework involves considerable investment in developing competencies and skills for evaluation and assessment at all levels (Santiago *et al.*, 2012). Each level understands their role as not only collecting data – both quantitative and qualitative – from lower levels of the administration, but also to provide analysis, feedback and support back to the school and classroom level, with a view to improving practices.

Notes

1. As mentioned in Chapter 1, the *Telesecundarias* system – attended by one out of five students – was created in the 1960's to enhance access to education to rural or isolated areas in Mexico, although it was also expanded to urban areas. Instruction is delivered through specialised television broadcasts as well as printed and digital materials, and is complemented by a facilitator specially trained for this education modality (Santiago *et al.*, 2012).
2. Primary students attend school either in the morning or in the afternoon for a minimum of four hours for 200 days per year – a minimum of 800 hours per year, which is close to the OECD average of 774 hours of compulsory instruction time (students aged 7-8) and of 821 hours (students aged 9-11). Lower secondary students aged 12-14 spend 1 167 hours per year in school, well above the OECD average of 899 hours of compulsory instruction time (OECD, 2012a).
3. In 2012 the ratio of pupils per teacher in pre-primary school in Puebla was 21.9, compared to 25.4 pupils per teacher and teachers' aides in Mexico though much higher than the OECD average of 12.3 pupils per teacher. In the same year the average student-teacher ratio for primary schools in Puebla was 30 compared to an average of 28.1 in Mexico, and compared to a much lower average of 15.8 across OECD countries. For lower secondary school, the student-teacher ratio in Puebla is much lower than the average of Mexico, 17.3 compared to 32.7 respectively, and just above the OECD average of 13.7 (Proyecto Educativo, 2012; OECD, 2012a).

4. For details on the content and goals of the RIEB, see the OECD Review of Evaluation and Assessment in Mexico Santiago *et al.*, 2012).
5. Some of the actions include *i)* support for schools with low scores on ENLACE and *Multigrado* schools; *ii)* the creation of tutoring networks of principals, teachers and students; *iii)* special attention paid to the adaptation of curricular contents to local needs; *iv)* professional development for teachers, including a 20-hours training workshop to help them implementing a competency-based curriculum; *v)* support for students in transition between levels of schooling, over- aged students, those from migrant families and out-of-school children and adolescents; *iv)* and strengthening of the learning communities within schools (Proyecto Educativo, 2012).
6. The content of the programmes should be linked to the academic curricula and different instructional methods should be explored (Lauer *et al.*, 2006). The duration of the programmes should depend on the specific achievement targets, as longer programmes are more costly and do not necessarily lead to higher student achievement. Programmes that offer small group instruction, particularly one-on-one tutoring, are more effective for at-risk students.
7. For young children, mixed age groups allow learning (playing) within their zones of proximal development; provides them with models to emulate; and, with additional sources of care and emotional support. For older children and adolescents, mixed age groups facilitate development of their capacities to nurture and lead; expands their understanding through teaching; and, fosters creativity in older children.
8. A recent research study using PISA data suggests that parental habits and attitudes towards intellectually engaging activities, and towards books and academic achievement, shape their child's attitudes towards reading, school and learning, and ultimately school performance as well (OECD, 2012c). Also, the analysis suggest that reading books to children when they are just beginning primary school has a positive impact on reading performance and talking about social and political issues, or about books, films and television programmes with adolescent children is related to better reading performance at school. Moreover, parental involvement in their child's school is associated with greater student engagement in school, including participating in activities such as meetings with teachers or school principals or volunteer work at school.
9. The concept is known to many young people through the *Harry Potter* school experiences, which are influenced no doubt by a long-standing United Kingdom schooling tradition. This kind of support has greatest relevance in the lower secondary school stage and during school transitions. The ultimate aim is to ensure that every student is known to at least one adult in the school and who will support his or her development and help each raise his or her expectations.
10. The new format has recently been introduced for the reporting system. Further explanation of the system is available in the OECD Review of Evaluation and Assessment in Mexico (Santiago *et al.*, 2012).
11. As Wiggins (1998) puts it: "Safeguarding the core premise that assessment should improve performance, not just audit it, requires that assessment embody and demand self-adjustment based on good feedback... the moment when the student understands why some part of his or her work is a mistake is entirely different from the moment when the student perceives that the teacher does not like that part of the work. The best feedback is highly specific, directly revealing or highly descriptive of what

actually resulted, clear to the performer, and available or offered in terms of specific targets and standards.”

12. Federal-SEP promoted in 2012 new accreditation and promotion rules for Basic Education (ACUERDO 648) aiming at reducing grade repetition, particularly in primary education.
13. Learning support teachers could fulfil a number of functions. First, working flexibly alongside with a student or with a small group of students within or outside the classroom to reinforce their learning; supporting those who have missed work because of long absence or who have been confronted with a particular learning or personal challenge. Second, they can also work with students who easily grasped a learning issue and need to be set more challenging tasks. Teachers may also substitute for the classroom teacher while he or she is on training. Also, support teachers may also be a key contact for the school principal, supervisors, parents and the expert learning teams (suggested in Recommendation 3C). Finally, such learning support teachers might, through experience and / or through a more formalised additional teaching qualification, fulfil a consultancy role for class teachers, helping to diagnose learning barriers, advising on suitable resources or suggesting alternative tasks for students.
14. Consejo de Ciencia y Tecnología del Estado de Puebla, www.concytep.pue.gob.mx.
15. Evaluations of this programme have been positive overall, although some deficiencies at the operational level and limitations in the attainment of objectives have been identified. For example, schools still deal with a great amount of bureaucratic burdens, and capacity- building for better instructional leadership does not always takes place. In this important step, supervisors also still need to become pedagogic allies of the school director.

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Chapter 3.

Improving the quality of teachers and school leaders in Puebla

Teachers and school leaders are the building blocks of the success of a country's education system, but in Mexico, and Puebla is no exception. The need for a high quality teacher workforce in basic education has encountered economic, political and pedagogic difficulties. The roles and expectations of teachers and school leaders are unclear because there are no common standards in place. At present, the teaching profession in Mexico does not attract the best candidates and selection into initial education and teaching positions is not solely based on competence. There is an overprovision of initial teacher training which has an uneven quality and professional development opportunities lack both structure and a school-based focus. Similarly, school leaders and other education leaders are not well-prepared, supported or recognised, and their role lacks a focus on educational improvement.

To raise the quality of teachers and school leaders, this chapter looks into policies to:

- ▶ *Foster the development and use of standards to clarify the roles and set high expectations for teachers and education leaders*
- ▶ *Adjust the provision and raise the quality of the Normales*
- ▶ *Develop and consolidate a professional development system more responsive to teachers' and schools' needs*
- ▶ *Better select and prepare current and future school leaders and supervisors*

Teachers have played a major role in the development of the education system and in the consolidation of the modern Mexican state. Today, Puebla is faces a dual challenge: to consolidate strong teams of teachers and school leaders capable of meeting the demands of the 21st Century, and to provide them with better systemic, school and classroom conditions in order to facilitate student learning.

Teachers, school principals and education leaders

In Mexico, the education workforce is employed by state education authorities and composed of:

- *Teachers*, who are not distinguished by level of teaching competence (e.g. competent teachers, established teachers and expert teachers) as is the case in other OECD countries.
- *Education leaders* include school principals (directores); supervisors in charge of supervising several schools in a geographical zone (supervisores or inspectores); and superintendents supervising different school zones that form a school sector (jefes de sector). Supervisors usually work by levels, which means that in one zone, there are different supervisors for preschool, primary and for lower secondary. Subject leaders (jefes de enseñanza) are also part of the supervision team for lower secondary schools.
- *Technical pedagogic advisors* (ATPs, asesores técnico pedagógicos) who assist education leaders, although they do not have a clearly defined role as their posts do not officially exist within the legal structure. The ATPs could be at schools, school zone or school sector level (OECD, 2010; Santiago *et al.*, 2012; Proyecto Educativo, 2012).

In the school year 2010-11, a total of 58 917 teachers, 4 521 school principals and 2 070 individuals in supervising positions served the 1.4 million students in 11 575 basic education schools in Puebla. In 2000-01 the total number of teachers was 49 470. This represents an increase of 19% in the number of teachers over a decade, ranging from only 5 % in primary education to 60 % increase at the preschool level¹. The total number of basic education schools increased 14% from 2000-01, when there were only 10 180. This means that Puebla has increased the number of teachers per school during the last decade (Proyecto Educativo, 2012).

Although the number of basic education schools has grown in the last decade in Puebla, especially at the preschool and lower secondary levels, formally no new principals, supervisors and other education leaders post have been appointed since 2000. Officially, there are approximately 4 500 principals for over 11 500 basic education schools (Proyecto Educativo, 2012). Instead, many teachers have been “invited” to take office as a “commission”, a term referred to those with responsibilities that are not formally recognised or paid accordingly. *Comisiones* are of particular concern as 56.4 % of primary schools principals in Puebla have a dual role as classroom teachers and school principals (most are multi-grade schools) (INEE, 2010).

Despite the figures above, in Mexico the exact number of teachers, school principals and education leaders is unknown. Official statistics on the number of registered teachers are based on the number of teaching and leadership posts (*plazas*) – a figure that does not reflect the number of staff who are actually working in or for schools. In order to respond to these challenges, several initiatives have been tried at the Federal and state levels. In 2010, the National Congress approved an initiative to begin the consolidation of a National Teacher Census (*Padrón Nacional de Maestros*) but it did not apply to all teachers² (OECD, 2010). At the beginning of the 2012-2013 school year, federal SEP

officially announced the National Register of Students, Teachers and Schools (*Registro Nacional de Alumnos, Maestros y Escuelas*, RNAME). The constitutional amendments of February 2013 provided for the creation of an information and management system and entrusted the INEGI (the National Institute of Statistics and Geography) with the responsibility of carrying out a census of schools, teachers and students in 2013, which represents a promising avenue to solve the current data inaccuracies.

Being a teacher and a school leader in Puebla

Many Puebla teachers and school leaders, as in other states, work under complex conditions compared to most OECD countries. The school day in Mexico has traditionally been short to cater for the large number of students in the system. Schools typically operate on a double shift (“morning” and “afternoon”) (see Chapters 1 and 2). As a result, teachers and school leaders have one or more posts at a time, which may be in another school or not related to education.³ Resources at schools are generally scarce (see Chapter 5) (OECD, 2010) and many teachers work in very remote or small schools, where there are few opportunities for teamwork and learning from each other.

According to previous studies conducted by the OECD in Mexico, the teaching and school leadership are professions that have lost their former high social status (Aguerrondo *et al.*, 2009; OECD 2010; Santiago *et al.*, 2012), which may be due to several factors. Firstly, there is no formal framework of professional standards setting high and clear expectations and guidance. Secondly, in recent decades teachers have been blamed for the systemic deficiencies in the education system, low student results in standardised tests such as ENLACE and PISA and for unpopular or opaque decisions and actions taken by union leaders (OECD, 2010). Finally, the Mexican system does not have yet the capacity to identify underperforming staff who often stay in the system in detriment to the general perception of the profession and students’ learning.

The importance and role of the Mexican education staff is often publicly debated. However, little evidence into current teaching and school leadership practices in Mexican schools suggests a lack of interest in this topic from policy makers and, with a few exceptions, researchers (Goodson, 2003; Santizo Rodall, 2009). Puebla does not seem to be an exception as, for instance, very little is known about the academic profile, socio-economic or cultural background of applicants or enrolled students in initial teacher education programmes. This lack of evidence is of particular concern as around 93% of the education budget is spent on teachers’ and school leaders’ salaries in Puebla, and this figure steadily increased over the past two decades (Proyecto Educativo, 2012).

Initial teacher education

Upon completion of upper secondary education, students can apply to a Teacher College (*Escuela Normal*), a higher education institution, to enrol in the four-year initial teacher education programme (*licenciatura*) required for obtaining a permanent teacher post in basic education.

Puebla has 11 public and 20 private *Normales* (65% of the latter are run by religious institutions). In 2010-11 a total of 10 000 students were enrolled in their initial teacher education programme, and around 2 500 (25%) were in their final year. In 2016, Puebla expect to have 1 780 additional graduates ready to apply for a teaching post (Proyecto Educativo, 2012). Enrolment in teacher education programmes far exceeds the demand for teachers in the state. This mismatch can be seen in 2012-2013 when only 84 full-time teaching posts and 217 teaching hours for basic education were open for competition.

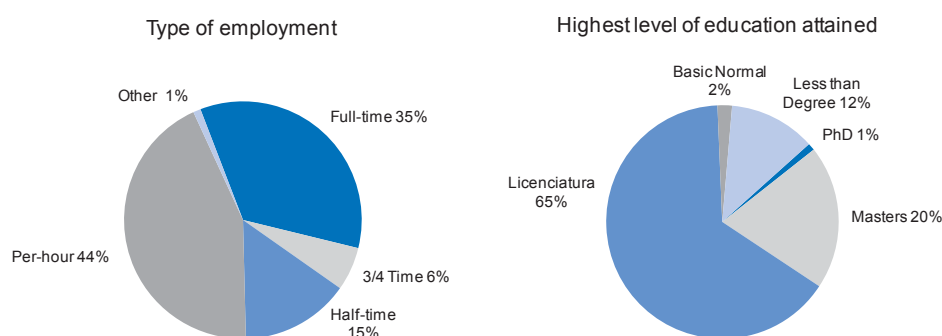
While other new vacancies (due to illness, maternity leave and other incidents) are not included in these figures, these still represents a small fraction of those seeking teaching posts.

Teacher Colleges have little autonomy. The federal government decides on curricula and type of degrees delivered (*licenciaturas*), while states are formally responsible for hiring faculty members in the Public *Normales*. While states can not make structural adjustments they can do substantial ones, such as encouraging specific teaching approaches or institutional assessment.

The quality of education provided by the different Teacher Colleges in Puebla is varied according to the limited amount of information available. While information on enrolment and completion rates as well as on student achievement and graduates obtaining teaching posts has been systematically collected in recent years, it is not public or easily available to candidates and current students. Similarly, information on the early years of new teachers in the education system is limited.

The appointment of the faculty of *Normales* follows rules that are vague, not opaque and unknown to many teachers and *Normales* school leaders. In most cases, decisions are taken by SEP-Puebla in coordination with the SNTE or appointed directly by SNTE. The lack of standards and clear rules in the selection process of the faculty and the inability to select their own academic staff hamper the creation of academic teams with adequate profiles to support institutional projects. Also, almost half of the staff (44%) is appointed per class-period and many full-time teachers have no extra time to perform any task other than teaching classes (see table 3.1). Only 21% of all faculty members have attained an academic degree higher than *licenciatura* (which is today the minimum level to obtain a permanent teaching post in a *Normal*) and only 1% of the faculty has a PhD (see table 3.2). Nevertheless, a series of federal and state policies aim to encourage teachers in *Normales* to obtain Masters and PhDs (see more in Recommendation 3).

Figure 3.1. Type of employment and highest educational attainment of Puebla's *Normales* faculty



Source: Proyecto Educativo A.C. (2012), Background Report Puebla, Secretaría de Educación Pública del Estado de Puebla.

StatLink  <http://dx.doi.org/10.1787/888932830217>

Many *Normales* are weakly connected to other parts of the education sector, in particular to schools and universities. They have developed a closed structure with little interaction with other academic institutions or research centers (OECD, 2010; Ornelas, 2008). Even though there is a National Pedagogic University (*Universidad Pedagógica*

Nacional, UPN), federally dependent, with three units in the State of Puebla, it only deals with post initial training courses and is little related to the Colleges.

Entrance to the profession

Prior to 2008, Mexico did not have a national licensing mechanism for teaching and the rules for the allocation of posts varied across states. In 2008, the first national entrance examination for teachers was implemented in Puebla, and in most states, as part of a National Teaching Post Competition. The competition only covers *newly created* permanent teaching posts nationwide and *vacancies* in some states, which is the case of Puebla, but it does not include school principal posts. In order to compete, candidates should hold a degree from a *Normal* or another higher education institution.⁴ In 2012, it registered 11 045 applicants in Puebla and the average score was 1,002, similar to the national average (1 000), in a scale from 700 to 1 300. Applicants who do not obtain a position must wait for the following year or apply to private schools.

Induction programmes for new teachers are rare in Mexico, or in Puebla. In addition, there is no probation period at the end of which newly qualified teachers must demonstrate their competence in facilitating student learning and undertaking other aspects of their teaching roles. Moreover, beginner teachers who obtain a permanent post immediately after their studies can keep it *de facto* for their whole life. Furthermore, there does not seem to be much discussion at the federal and state levels about the need to develop specific mechanisms to support and assess new teachers and help them to develop their professional skills.

In general, school and education leaders do not receive a specific induction before they take office and most of them tend to reproduce their predecessor's inertia. Since no official standards have been developed, monitoring and support are rather piecemeal, and their legal duties are not clearly defined in a single document but spread across many documents some of which are decades old (Proyecto Educativo, 2012; OECD, 2010). In the case of supervisors, Puebla is taking a leading role in the clarification of the tasks actually undertaken and developing a Supervision Guide (see Recommendation 1A).

Professional development

Continuous professional development is a responsibility of the federal government. Each school year the federal government publishes *National Catalogue of Continuous Training and Professional Betterment for Basic Education* after evaluating the proposals submitted by higher education institutions and other providers.⁵ The National Catalogue contains all authorised academic programmes (*i.e.* courses, associate's degrees, specialisations, and Master and Doctoral programmes) that states can offer to teachers and other education actors of preschool, primary and secondary education. The courses target the teacher as an individual and do not take into consideration the needs of his or her school. There is not a structured offer of courses for school principals and supervisors and formal school-based training for groups of teachers or the entire school staff is almost inexistent.

States prepare their own catalogue listing those options of the National Catalogue that respond to their needs, but these courses are financed by the federal government. State governments can also provide and finance additional training courses. In 2012, the federal government invested over MXN 424 million in in-service education, or an average of MXN 360 (USD 28) per basic education teacher.⁶ Puebla government also devoted a significant amount of resources to in-service training (MXN 100 million in 2011 and

MXN 120 million in 2012). Also, Puebla signed agreements with the leading higher education institution of the state, the *Benemérita Universidad Autónoma de Puebla* (BUAP), for the provision of courses. These included certifications in Mathematics, English and Digital skills as well as courses in Spanish and Education Management (see Table 3.3) (Proyecto Educativo, 2012).

Table 3.1. Teachers in accreditation programmes

Subject	Certifying institution	Number of accredited teachers (2012)
Mathematics	BUAP	912
English	University of Cambridge	772
Digital skills	International Society for Technology in Education (ISTE)	

Source: Proyecto Educativo (2012).

Promotion and incentives

In Mexico, teachers who are part of the SNTE can opt for two complementary types of promotions:

- *Vertical promotion (Escalafón)* results in a change of role (from teacher to school principal, then to head of teaching or supervisor and other leadership positions). After six months in the teaching service, all teachers in formal posts become part of the *Escalafón* and are ranked on four basic criteria: academic preparation (e.g. degrees, diplomas; worth 45%); attitude (measured by participation in non-obligatory activities; 25%); years of experience (20%); and, discipline and punctuality (10%).⁷ A committee (*Comisión Mixta de Escalafón*), on which state authorities and the SNTE are equally represented, evaluates the candidates for open positions and makes the final decision. Although experience formally accounts for a relatively small portion of the total, it is hard to find a supervisor under 45 years old, or a superintendent under 55 years old (Proyecto Educativo, 2012).
- *Horizontal promotion* (National Teacher Career Programme or *Carrera Magisterial* (CM) consists of monthly salary bonuses based on a series of factors. Basic education teachers, principals, supervisors and ATP can voluntarily enrol. Entrants can receive periodic promotions, through levels labeled A to E, each representing a salary increase of around 15 – 25 percent. Getting to the next stage involves applying to a process that considers a specific set of criteria established by the *Comisión Mixta de Carrera Magisterial*, a Commission where federal authorities and SNTE representatives are equally represented. In 2011, the General Guidelines were revised in order to introduce the results of the Universal Evaluation with a weight of 5%. In Puebla, 20 049 basic education teachers have enrolled in the CM. This also means that only the career of about 35% of them is regularly appraised.⁸

In Puebla most teachers and education leaders are part of the SNTE. During the school visits, the OECD team was informed that teachers and education leaders that have officially expressed their affiliation to another union have great difficulties in being promoted by the committees of *Carrera Magisterial* and *Escalafón*.

The mechanism to appoint pedagogic assistants (*asesores técnico-pedagógicos*, ATPs) is different. Most ATPs are invited by a superintendent or supervisor to become a member of their team. Chosen from amongst the teachers of the schools under their responsibility, the criterion used to invite them is not clearly defined, does not follow specific standards and varies substantially from one case to another. Usually one or two ATPs work with every superintendent and supervisor, although some supervisors have no ATP because that would leave groups or schools unattended. Unlike supervisors and superintendents, ATPs become “*comisionados*” and thus receive no salary increase.

Universal Evaluation

The Universal Evaluation System (*Evaluación Universal de Docentes*) is a recent initiative from the Mexican federal Government to introduce in-service teacher appraisal for developmental purposes covering the entire teaching workforce. Its main objectives are to: increase the quality of education outcomes; strengthen the public and professional accountability of teachers and the other staff; and serve as a basis for ancillary policies and programs based on the results of the evaluations (OECD, 2011a).

The government envisages the Universal Evaluation system as purely formative and diagnostic. Therefore, it has not been designed to result in high-stakes consequences, including the exclusion from the education system. It will be mandatory for teachers, deputy directors, principals and ATPs and it will consist of an appraisal every three years. The diagnosis will inform the supply of professional development courses. Also, the results on student performance, professional preparation and continuous training in the Universal Evaluation System will be considered for the CM.

The Universal Evaluation is at an early stage of implementation and initially it was expected to be fully rolled-out in 2014. However, in 2012, there was significant opposition amongst some teacher groups and only a small proportion of teachers took the exam: 264 000 nationwide, out of which 12 200 in Puebla. Their main concerns are that the Universal Evaluation System could be used to dismiss teachers; the potential modification of the Universal Evaluation System away from its intended formative function; a possibility that only considering results from standardised examinations will lead to biased evaluations; and that teachers’ opinions are not being taken into consideration in the design of this policy (Santiago *et al.*, 2012). The opposition may also be due to insufficient information having been disseminated about the nature and objectives of the new assessment (Proyecto Educativo, 2012).

Priorities and opportunities for the years ahead

Within federal policies, Puebla has found a way to build its own response adapted to its needs and possibilities. But as to the long term vision, the challenge is greater. The question is to have an impact in all schools, in spite of their diversity and specialisation, and to make this change sustainable. As Fullan pointed out 20 years ago, and continues to be a reality in Puebla (and in Mexico) “*A critical new theme of the 1990’s was how to achieve a large scale reform. In the current decade sustainability has been added as a major concern. These twin concepts represent a radical shift from understanding individual school innovation toward establishing system change that generates and supports continuous improvement on a large scale*” (Fullan, 2001).

The consolidation a strong, critical, independent and highly-skilled teaching and leadership force in Puebla is key. To this end, Puebla should consider:

- *Foster the development and use of standards to clarify the roles of teachers and school leaders*, and develop a set of competences for supervisors and other education leaders.
- *Redesign central aspects of Teacher Colleges*: Attract better candidates and raise the bar for entry into Normales by taking advantage of the current supply-demand mismatch.
- *Foster and enlarge professional development opportunities and evaluation*: Develop a more efficient system of continuous professional development for teachers and education leaders, complementing individual training with school-based development, while also carrying on the implementation of the Evaluación Universal.
- *Professionalise the school leadership career*: Better select and prepare current and future school leaders and supervisors, and provide specialised training.

Recommendation 1: Foster the development and use of standards to clarify the roles and set high expectations for teachers and education leaders

The Puebla context

Education standards have recently been introduced in Mexico for curricula of the main subjects of basic education, in accordance to the Integral Reform of Basic Education (*Reforma Integral de Educación Básica*, RIEB). However, the education system still lacks a sound and widely used national framework defining standards for the teaching and school leadership professions. Lack of standards means that there is no clear and concise statement or profile of what teachers and school principals are expected to know and be able to do, leading to unaligned that training, support and assessment. In spite of this, promising initiatives have been taken place in recent years⁹, including four proposals of teacher standards between 2006 and 2012¹⁰ and school management standards introduced in schools that participate in the Programme of Quality Schools (*Programa Escuelas de Calidad*, PEC) (SEP, 2010). Since 2009, the SEP is also considering the development and introduction of an accreditation system for school quality, as it has recently been the case of upper secondary education (see Chapter 4).¹¹

The actual operation and evaluation of schools is also complicated by the fact that the responsibilities of supervisors and superintendents are not clearly defined in a common official guide or manual (see Chapter 2), while there are a multiplicity of complex governing rules. Also, education leaders receive little formal training, have low capacity to follow up schools, and their responsibilities and attributions are imbalanced. A recent survey from (SEP Puebla, 2012) found that each superintendent and supervisor follows different criteria when approaching similar problems and many of them acknowledged that they still need to develop essential competences to effectively perform their roles. To provide clearer information to supervisors, Puebla is developing a Supervision Guide that is expected to be ready by the 2013-14 school-year¹² (Proyecto Educativo, 2012).

The international context

The concept of *standard* in education means what is expected to know and be able to do in a fixed ambit reckoned as competent (Storey, 2006 in Meckes et al., *forthcoming*). Standards can be understood as a definition of the scope of performance or learning which are appreciated and fostered, but can also be used to evaluate if what is expected has been achieved or not. (Meckes *et al*, *forthcoming*). In many OECD countries, there are curricula standards, teaching standards, school leadership standards or management

standards (associated with school leaders performance), and standards for other education leaders.

Teaching and school leadership standards should also express different levels of performance and responsibilities expected at different career stages (OECD, 2010, 2011a; Santiago *et al.*, 2012) and should define those teachers' and school leaders' practices and competences in which they need to be effective to improve student learning. For example, Chile frames a set of teaching standards in the *Marco de la Buena Enseñanza* in four core areas: (i) preparation for teaching; (ii) creation of an adequate learning environment; (iii) teaching to ensure student learning; and (iv) professional development.¹³ School principals in high performing countries give far more relevance to the pedagogic responsibility of the role than to the administrative aspects and standards are usually centred in the quality of leadership, curricular management, effective use of resources, organisational climate, and relations with the community. Annex. Box 3.A1 shows the standards in Chile and Ontario (Canada).

Standards can be very useful to identify individual training needs, but can also facilitate coherence of provision across institutions, appropriate variety for effective training and design of teacher and leadership programmes of the highest possible quality and relevance. Standards should be developed in consultation and participation of the relevant actors to allow proper ownership and effective relevance of the final result. For example, in Scotland, the standards set by the General Teaching Council for Scotland (GTCS) were developed with contributions made by national organizations, local authorities, teacher and head teacher associations.¹⁴

International experience also shows the importance of an independent body to ensure that standards are uniformly implemented. Prior to 1992, schools in UK were inspected by Local Education Authority (LEA)-employed inspectors. This system fell into disrepute because of inconsistent standards across the country and concerns about the independence of inspectors of local chief education officers and councillors. In 1992, the Ofsted, (Office for Standards in Education, Children's Services and Skills) was created to develop uniform criteria of schools' evaluation. Established initially as the Office for Standards in Education, it is an independent, non-ministerial government department reporting directly to Parliament, responsible for inspecting and regulating education and training for learners of all ages and for inspecting and regulating those services which care for children and young individuals.

Strategies for action

1A. Foster the development and use of standards for teachers and school leaders in alignment with the support and evaluation system

Puebla should continue fostering the development of a basic reference of what good teaching and good school leadership mean. This means establishing a clear set of coherent teaching and school leadership standards at the federal level and ensure their usage at the state level. Standards will signal to teachers and to society as a whole the core knowledge, skills and values associated with effective teaching and leadership at different stages of a career (OECD, 2010, 2011a, 2011b; Mancera and Schmelkes, 2010). To this end, Puebla could encourage other states and the federal SEP to establish a specific agenda to launch the Mexican teacher and school leadership standards.

Puebla could create momentum and foster an agreement on an initial version of the standards, which could be periodically revised and enriched through clear feedback mechanisms, by:

- *Starting a consultation process to agree on a first set of standards:* a process in which a variety of actors at different levels and from different bodies (e.g., teachers, education experts, state authorities and other agencies in charge of teacher education and appraisal) generate knowledge and ownership of the standards;
- *Implementing and aligning standards with current and future support,* training and assessment initiatives for students, teachers, principals, education leaders and schools; and
- *Developing feedback mechanisms for “quick fixes”* and for future structural revisions of the standards to ensure that these remain aligned with other elements of the system and useful.

In terms of structure and content, Puebla could encourage the development of standards that reflect the different phases of the teacher and school leadership career. Clear-cut definitions of the goals to be achieved in order to guide teaching professional development and recognition could be introduced. Recently graduated teachers should not be expected to handle the same competences as their more experienced colleagues. OECD countries have different approaches as regards the number different grades of teachers: two in Ontario (new and experienced teachers), three in the United Kingdom (new-qualified teacher, mid career teacher and experienced practitioner), and four in New South Wales (Australia) (graduate teacher, professional competence, professional accomplishment, and professional leadership) (see Annex 3.A1). Similar distinctions may be relevant to define the competences and goals expected from school leaders and other officials such as: ATP and deputy school principal (*subdirectores*). In addition, transforming their practice standards should “make sense” for them, which will facilitate embedding the desired principles in teachers’ and principals’ everyday work in the classroom (Santiago et al., 2012).

Puebla could consider the following in the design of these standards:

- *Promote comprehensive standard frameworks.* Mexico has been developing teaching standards through the observation of teachers’ practices in effective schools. Although this approach is innovative, it may not be sufficient if the objective is to promote teacher professionalism, as these standards may be too constraining and specific (OECD, 2010; Barrera and Myers, 2011).
- *Use the standards to guide key elements of the teaching and school leadership profession.* The teaching standards should be developed in a way as to provide a common basis to guide key elements of the teaching profession such as initial teacher education, teacher professional development, career advancement and, of course, teacher appraisal (including the alignment of its different components). The same applies to school leadership standards in relation to school leadership.

Puebla should also envisage measures to help teachers and school leaders embed these standards in their regular practice. This can be achieved at several stages of teachers’ careers (NBRC, 2010): (i) initial teacher education so that new teachers already have a clear understanding of what is expected from them; (ii) induction and mentoring programmes to ease the transition between initial education and school-level practice (Hobson et al., 2009); and (iii) in-service teachers must receive training on the use of

standards and their implications for classroom practice (Mancera and Schmelkes, 2010). Moreover, Puebla should support teachers and school principals to acquire the competences that will help them achieve those standards, and use continuous assessment to ensure that they are being achieved (see Recommendations 2, 3 and 4 and Recommendations in Chapter 2).

1B. Continue to develop a common set of competences for supervisors and other education leaders

Despite the fundamental role of supervisors, superintendents, ATPs and other education leaders have in the improvement of the education system, Mexico does not have a clear and unique set of competences and tasks for these posts. However, Puebla has already started to clarify their roles with a diagnostic survey on basic education supervisors and with the development of the Supervision Guide.

Puebla could also commission the expert group preparing the Supervision Guide to work on a proposal of a set of competences and tasks that supervisors should accomplish, which could define their new role as *education improvement officers* (see Recommendation 4A and 4B in Chapter 2). Otherwise, a specific action plan can be developed to provide a framework in the mid-term for a stronger role in supporting and evaluating schools for improvement. The Guide and set of competences could also enrich or be the pillars of a nation-wide *Framework for Good Supervision*. In countries such as the United Kingdom, there is a clear set of principles for inspectors of 0-19 year-old students institutions (see Annex 3.A1). Puebla can also take the lead in conducting similar exercises to support the development of standards for superintendents, ATPs and other education posts.

In addition, the expert group could propose ways to better prepare and support supervisors to acquire those competences. This should continue to be done in close collaboration and consultation with supervisors and other education actors (*e.g.* school principals, superintendents, teachers) and Puebla could also consider integrating highly respected and independent academics and other education figures to reduce the risk of politicisation.

Recommendation 2: Adjust the provision and raise the quality of the *Normales*

The context in Puebla

While enrolment in *Normales* declined by 33% between 2000 and 2010, The State of Puebla has the highest number of students in teacher colleges in the country. In comparison, figures from the 2010-11 school year show that the State of Mexico, which has 2.6 times the population of Puebla, had only 7 600 teacher college students - 25% less than Puebla. Between 2000 and 2010, 10 private teacher colleges closed, but the number of public teacher colleges remained the same. Current demographic trends and statistics of the federal SEP suggest that the vast majority of these newly graduated teachers will not find a full-time teaching post in Puebla public schools (SEP, 2012). This mismatch has high costs for individuals and the education system. Puebla has now a historical opportunity to select the best qualified applicants and graduates from *Normales* to ensure high-quality teachers and increase the quality of these institutions by specialising, closing or downsizing them.

Some measures have been taken at federal government level to boost the academic quality of the Colleges. Among them, the PEFEN (State Plan for Strengthening Teacher Colleges) aims to reduce differences in the quality of the faculty of *Normales*, make the use of public resources and educational results more transparent, and foster a system of Teacher colleges of quality at the state level and support their transformation into higher education institutions.

Other federal efforts include scholarship programmes for students and faculty members: the National Programme of Scholarships for Higher Education (*Programa Nacional de Becas para la Educación Superior PRONABES*), which supported 1 005 students with limited financial resources nationwide in the school year 2011-2012; and, the Programme of Scholarships for the Intensive Practice and Social Service (PROBAPISS) *Programa Beca de Apoyo a la Práctica Intensiva y al Servicio Social para Estudiantes de Séptimo y Octavo Semestres de Escuelas Normales Públicas* for the development of the education practices and the social service for students of seventh and eighth semesters of Public Teacher Colleges (2 398 students in 2011 and 2 243 in 2012). Faculty members can apply to the Programme of Improvement of the Faculty (*Programa de Mejoramiento del Profesorado* (PROMEP) for postgraduate studies, but only four teachers were granted such scholarships in 2011 and 11 in 2012 in Puebla. In contrast with several other OECD countries, in Mexico there are no programmes to attract the best students from upper secondary schools into the teaching profession.

However, these strategies have not yet succeeded in transforming the *Normales* in centres of academic research, excellence in teaching and pedagogic innovations. A major obstacle to this process is Mexico's model of hiring teachers, which gives them tenure for class-period, half time or three-quarters of time, and does not clearly state the duties of full-time teachers (35% of the current faculty). In Puebla, the workload among full-time teachers is decided in each Normal and there are wide differences between them.¹⁵ Despite the efforts of SEP to link more closely the Teacher Colleges with higher education institutions, there is a strong historic inertia that maintains the former as major centres of training and certification of basic school teachers (Ornelas, 2008), which strengthens the SNTE.

In line with most OECD countries, Puebla decided to undergo a process of accreditation for higher education institutions, although it is limited to management and administration aspects, not the pedagogic components.¹⁶ All higher education institutions initiated the process of accreditation in 2009 by the ISO-901 norms. Four out of the 11 public Teacher Colleges have now already obtained accreditation and the rest are in the process to do so. Also, in 2011, 54 out of 77 programmes offered by public *Normales* were assessed by the Interstate Committees of Higher Education Assessment (*Comités Interestatales de Evaluación de Educación Superior- CIEES*). While 18 programmes were granted accreditation (Level 1), additional improvements were required to the rest (Level 2) but no programme was classified at the lowest level (Level 3). The 20 private Colleges have had access to the CIEES accreditation process but until now their participation has been limited and Puebla has limited legal powers to make it mandatory for them.

The international context

Teachers are one of the main pillars of any education system and in high performing education systems, teaching is also perceived by young individuals as an attractive career choice which makes admission to teacher education intellectually demanding and highly

competitive. Barber and Mourshed (2007) found that the top-performing systems recruit their teachers from the top third of each graduates' cohort (top 5% in South Korea, 10% in Finland and 30% in Singapore and Japan). Also, two main features of the selection are: 1) selection occurs before the start of the ITE programme and the number of places is limited so that supply matches demand, and 2) recruitment into the teaching profession occurs after graduation and only the best candidates are recruited. They recognise that a bad selection decision can result in up to 40 years of poor teaching and so it is essential to design selection procedures that assess the set of skills and attributes that effective teachers should possess: a high overall level of literacy and numeracy, strong interpersonal and communication skills, a willingness to learn, and the motivation to teach (Barber and Mourshed, 2007; OECD, 2005; OECD, 2010).

In addition to selecting the best candidates, high-performing countries such as Canada, Finland, Korea and Singapore, have systematically invested in enhancing the initial teacher education (ITE) programmes by moving towards:

- *More and better practical experience.* School placements in regular school are being replaced by placements in special teacher training schools or carefully assigned regular schools where highly trained master teachers supervise the learning of student teachers and support them.
- *More emphasis on developing the capacity to diagnose student problems quickly and accurately.* ITE students are well-trained in the use of formative assessment techniques and in drawing appropriate solutions from a wide repertoire (see Chapter 2 Recommendations 1 and 2).
- *Stronger specific instructional techniques for the subjects that the prospective teacher will teach.* For example, teacher education in Finland is a shared responsibility between the teacher-education faculty and the academic-subject faculty and there is substantial attention to subject-specific pedagogy for prospective teachers.
- *More reflection on the practice.* In some countries, notably Shanghai-China and Finland, critical reflection on practice, using educational research knowledge and methodologies, takes place in higher education as well as in school classrooms, thereby creating a 'virtuous circle' of reflective practice (OECD, 2011c).

Strategies for action

2A. Carry out a study of the supply and demand of teachers to develop an adjustment plan

Teacher training supply in the State of Puebla does not match its needs: there are strong signs of a surplus of students in *Normales* and of an oversupply of graduates. To reduce the costs of the mismatch and take advantage of the current oversupply, Puebla should urgently undertake a comprehensive and rigorous study of the supply and demand of teachers and other education professionals.

This study should estimate the demand for teachers' and other education professionals' per role and specialisation, while taking into account the territorial and socio-economic size of the state. The study should also consider the institutional characteristics of each public and private Teacher College (*Escuela Normal*), such as the composition and background of those enrolled, desertion and repetition, academic characteristics of the teachers, and the destination of graduates. The study should include

a proposal for the reorganisation plan and ensure the adequate supply of teachers for the state. The results must be public and widely disseminated, particularly among the present and future students of these institutions and their families.

The study should form the basis of initiatives to improve the functioning and quality of the *Normales*: rationalise and restructure the education supply, better selection and support for teachers and applicants, and better infrastructure. It could include specific proposal to transform the *Normales* into specialised centres for preparing teachers for specific roles (e.g., *aulas multigrado*, leading supporting teams, school and education leaders, educating parents and adults) and to merge or close down those that offer low quality, poor infrastructure or have insufficient resources.

This study could be carried out by a mixed team of national and international experts on teacher training in consultation with relevant actors (*i.e.* members of the current government, SNTE, other unions, owners or managers of teacher colleges). However, any potential actor that could jeopardise the neutrality and transparency of the assessment process should be excluded.

Chile, Scotland, Ireland, the Flemish Community of Belgium are among the countries that have developed similar strategies to improve the quality of ITE programmes. For instance, in 2012, Ireland concluded a study aimed at reorganising the supply of initial teacher training and improving its quality. The study recommended merging the over 20 initial training centres into 6 centres, enhancing resources and increasing the potential of their teams and programmes (see Box 3.5). In the four jurisdictions of the United Kingdom a teacher workforce planning exercise is carried out annually covering geographical areas, education sectors and curriculum specialisations to ensure an appropriate supply of high-quality teachers (Department of Education and Skills, 2012).

Box 3.1. International Review on the Structure of Initial Teacher Education Provision in Ireland

In April 2012, an international review of the structure of Initial Teacher Education (ITE) provision in Ireland was conducted to strengthen the quality of teacher education. The review was a key part of a broader review of the Higher Education sector. The purpose of the review was “to identify possible new structures which will recognise and address weaker areas in the system of teacher education; leverage the current strengths in the system; and envision innovative strategies so that Ireland can provide a teacher education regime that is comparable with the best in the world.”

The Review Panel concluded that the provision for ITE in Ireland which includes 19 state-funded providers and 3 non-funded providers and over 40 programmes of ITE involved in the preparation of primary and post-primary teachers is not in accordance with high-performing international practice. In high-performing countries, there are relatively small numbers of institutions involved in ITE provision making it possible for a critical mass of staff and students to do research at a high level.

The Panel recommended to reduce to 6 ITE providers following certain configurations and also recommended that “mergers/alliances will take place whereby teacher education is facilitated at one location within the restructured setting.” The new configuration could be named “Institute of Teacher Education”, “Centre for Teacher Education”, or equivalent.

Box 3.1. International Review on the Structure of Initial Teacher Education Provision in Ireland (continued)

It was also recommended that “teacher education should be facilitated in a university setting with systematic links to clinical practice in field schools which provide where possible for the full range of sectoral teacher education, spanning early childhood to adult education as this would facilitate greater synergies between the different levels of education. It would also provide a critical mass for improving capacity for high quality research, the integration of students and staff across a number of disciplines and the promotion of balanced international mobility of students and staff.” The Review Panel also recommended a national policy for research, research funding, internationalisation, and education for school leadership.

Source: Department of Education and Skills (2012), "Report-of-the-International-Review-Panel-on-the-Structure-of-Initial-Teacher-Education-Provision-in-Ireland: Review conducted on behalf of the Department of Education and Skills", www.education.ie/en/Press-Events/Press-Releases/2012-Press-Releases/Report-of-the-International-Review-Panel-on-the-Structure-of-Initial-Teacher-Education-Provision-in-Ireland.pdf.

In Chile, between 1998 and 2002, where all initial teacher training is supplied by the universities, the Strengthening of the Initial Teacher Training Programme (*Programa de Fortalecimiento de la Formación Inicial Docente*) was introduced. Funding was granted to the universities with initial teacher training programmes, via a competition, for specific measures such as change of the curricula, improvement of the quality of faculty members, progressive practice, scholarships for outstanding students, networks of exchange, centralised coordination, participative development of generic standards for initial training and progressive increase of the quality of and amount of high performing candidates. This programme, initiated by the Ministry of Education in Chile, made a permanent and detailed follow-up of the different initiatives and ensured consensus to develop the basis to the Good Teaching Framework and the graduate profiles of future teachers (Ávalos, 2002). The Flemish Community of Belgium reconfigured the higher education landscape including teacher education programmes towards a higher education system differentiated and collaborative (Huys Debackere and De Kock, 2009).

2B. Raise the bar to enter the Normales and explore ways to attract better candidates

Puebla should select candidates with the highest potential to become excellent teachers, particularly now that there is both a surplus of candidates and a decreasing demand for teachers. To this end, Puebla should continue developing two current complementary policies: 1) attracting better candidates to the *Normales*, and 2) raising the bar for entry into these institutions.

Puebla could improve the calibre of applicants by establishing a demanding entrance screening exams at the state level, which could include current tests such as the EXANI-II. A high cut-off score should be established to ensure that only good candidates enter into the profession and it should probably be expressed in absolute terms rather than relative to the number or performance of the candidates. The examination should assess whether candidates have solid content knowledge in the subjects they intend to teach, as well as the required aptitude for, and commitment to, teaching as a career. Written exams could be complemented with other evaluation tools such as a set of interviews.

Raising the bar for entry into teacher preparation programmes is key to increasing the respect to the teaching profession and ultimately building support for improving the working conditions of teachers (OECD, 2010). If there are insufficient well-qualified candidates for some specific programmes (e.g. indigenous education) or regions, compensation strategies can also be implemented from the beginning. For example, few unqualified candidates can be allowed to enter into the standard ITE programme subject to successfully completing a remedial programme. Box 3.2 summarises some selected mechanisms of students' selection to entry teacher education programmes.

Box 3.2. Mechanisms for selecting students for teaching education programmes in selected countries

Singapore's and Finland's selection procedures are among the most effective. Both systems place a strong emphasis on the academic achievement of candidates, their communication skills and their motivation for teaching. **Singapore** has implemented a single, state-wide selection process that is managed by the Ministry of Education and the National Institute for Education. Once selected, they are then formally employed by the Ministry of Education and paid a salary during their training. Singapore can, and does, spend more on teacher training (per student) than other education systems because there are fewer individuals in its courses. All of these makes teacher training an attractive and high status course in Singapore and this, in turn, makes teaching an attractive and high-status profession.

Finland limits the number of places in teacher training so that the supply of teachers matches demand. The A national first-round in its selection process, which consist of a multiple-choice examination, designed to test numeracy, literacy and problem-solving skills, was introduced. The top-scoring candidates are then passed through to a second round in the selection procedure which is in run by the individual universities. In this round the candidates are tested for their communication skills, willingness to learn, academic ability, and motivation for teaching. Upon graduation for teacher training, the prospective teachers nevertheless need to pass yet further tests run by the individual schools to which they apply for teaching positions.

Boston, Chicago and New York have a somewhat different approach in that they control entry into teacher training only for prospective teachers on their Fellows and Residency Programs (rather than for all prospective teachers). For these programmes candidates are selected through a system-wide admissions process and guaranteed a teacher position in a school before they enter teacher training. Both programmes report that the caliber of their candidates is much higher than the cities' average intake.

England focuses on limiting the funding for teaching training to manage supply, and ensures that all training providers meet certain general standards for the selection of the student in their courses.

Source: Barber, M. and Mourshed, M. (2007), "How the world's best performing school systems came out on the top", McKinsey & Company, http://mckinseyonsociety.com/downloads/reports/Education/Worlds_School_Systems_Final.pdf.

More generally, adequate financial and non-financial incentives are essential to attract and support good candidates. Puebla should explore the possibility of creating scholarships to attract high performing upper secondary students into *Normales*. In 2010, Chile introduced a scholarship programme that almost doubled the proportion of enrolled students in quality ITE programmes with top scores (Alvarado, *et al.* 2012).¹⁷ Adequate working conditions in schools, a professional environment, professional guidance and

services from the authorities and the unions, and adequate salaries are also essential to increase the attractiveness of the teaching profession (OECD, 2010).

2C. Include pedagogical criteria in the accreditation of *Normales* and introduce measures to raise the quality of the faculty

While raising the bar in the admissions to *Normales* is a first step towards developing a highly qualified teaching workforce, the second necessary step is improving the education delivered in these institutions. To this end, Puebla should consider, in coordination with federal-SEP, fostering accreditation; enlarging its scope; ensuring a well-qualified faculty and establishing certification and re-certification processes.

Puebla should consider enlarging the scope of the accreditation scheme performed by the Interstate Committees of Higher Education Assessment (*Comités Interestatales de Evaluación de Educación Superior- CIEES*) with the assessment of pedagogic aspects as accreditation is currently limited to management ones. Since the CIEES accreditation is now fully implemented, enlarging this accreditation process could be more cost-effective than creating a new one. The assessment for accreditation should include *core* pedagogic aspects, including the processes of planning, teaching, designing activities, relating theory with practice, and assessment practices. In the long-term, this accreditation could form the basis for the creation of a *Framework for Effective Teacher Colleges (Escuelas Normales)* in Puebla and in the rest of the states. For example, in Ireland, the assessment criteria includes not only facilities, human and financial resources but also pedagogical processes such as promoting student engagement (Teaching Council, 2011).¹⁸

Since the quality of faculty members will not improve with more assessments and academic requirements alone, Puebla should consider:

- *Improving the attractiveness of the career*: better working conditions and professional development both in research and teaching activities.
- *Recruiting expert teachers in the subjects and pedagogic methods to be taught* with similar selection procedures to other higher education institutions (e.g., transparent, focused on academic skills and experience, and with a selection panel that includes faculty members). Above all these appointments should be free of political interferences from federal SEP, SEP-Puebla, SNTE and other political bodies, NGOs or religious organisations.
- *Reviewing labour conditions*: revise the type of appointments in order to reduce the number of temporary staff, clarify the obligations of full-time positions and reform the incentives of faculty members so that they are able to carry out institutional projects to enhance the quality of the institution, such as by tutoring students, participating in academic commissions, cooperating with other faculty or departments, developing and executing innovative proposals, and conducting applied research assignments, etc.
- *Establishing certification and re-certification schemes* that complement the creation of standards and to generate authentic control and quality assurance systems in the whole education system.¹⁹ OCDE (2005) summarises a quality control system with mechanisms that: *i)* considers accreditation by an independent agency to assure quality in teacher education; *ii)* ensures that accreditation criteria focuses on the outcomes of programmes rather than on their inputs, curriculum and processes; *iii)* ensures that certification of teachers includes subject matter knowledge, pedagogical skills, communication skills, experience and personal qualities; and *iv)* establishes a

mandatory probationary period of one to two years of teaching before full teaching certification or a permanent teaching post is awarded (see Recommendation 3B)

2D. Foster research and promote pedagogical innovation that responds to the specific learning needs of the state

Normales are also confronted to the challenge of becoming real centres of pedagogic innovations. Teacher Colleges in Puebla, in coordination with the State and the federation, should explore schemes to combine their resources and become centres of pedagogic excellence training future teachers to respond adequately to the needs of learning of their students and schools.

In addition to training teachers, *Normales* should be centres of support and dissemination of pedagogic innovations; they should be able to identify existing innovations, propose ways to scale them up and set a research agenda to introduce new innovations and further develop the existing ones. For example, Teacher Colleges could develop innovative pedagogic interventions adapted to each school environment. This means that research in *Normales* should be redefined to encompass research on learning and teaching practices, challenges, improvements and innovations in classrooms, in schools and outside schools, as opposed to the classic model of academic research in a university.

Recommendation 3: Develop and consolidate a professional development system more responsive to teachers' and schools' needs

The Puebla context

Improving continuous training has been defined as one of SEP Puebla's priorities (Proyecto Educativo, 2012). Puebla has three main approaches to define its professional development supply. First, offering teachers training corresponding to the RIEB goals mainly through the *Catálogo Nacional*. Second, continuing the federal policy of offering "training pathways" (*trayectos formativos*), which consists of sets of courses to obtain academic credits and, on completion an academic grade such a *diplomados*, masters or PhDs. Third, using ENLACE and the *Evaluación Universal* to identify training needs (Proyecto Educativo, 2012).

All courses included in the National Catalogue and those offered by Puebla are designed, offered and certified by universities or SEP Puebla itself. Recently, the Under-Secretaries of Higher Education and of Basic Education have launched common teacher training: 64 000 courses in various disciplines under the Programme of Teacher Development for upper secondary schools and 600 Degrees as Quality Promoters. Other SEP areas have also developed training courses, such as one on Innovation Management which is part of the *Digital Skills for All (Habilidades Digitales para Todos)* programme which aims for the certification of teachers in the use of ICTs. Its 2012-13 goal is to reach 15 000 teachers. (Proyecto Educativo, 2012). Many courses are taught by Technical-Pedagogic Advisors (*asesores técnico-pedagógicos*-(ATPs) and by the Teacher Centers (*Centros de Maestros*). (Proyecto Educativo, 2012). The *Centros de Maestros* are spread all over the state, in which teachers can take continuous education courses. These are also usually meeting points for teachers and ATPs; supervisors and other education leaders who have their offices in some of them (Proyecto Educativo, 2012).

In practice classroom teachers, school management staff, supervisors, heads of teaching and technical pedagogical advisors or ATPs decide what type of training and how can they obtain it. One option is to voluntarily participate in the National Examinations for the Continuous Training of In-Service Teachers (*Exámenes Nacionales para la Actualización de Maestros en Servicio*, ENAMS). The main goals of these exams are to provide a diagnosis of teachers' professional competences and assist teachers in identifying their professional development needs. In the context of the 2012 reforms, which involve revisions to the National Teacher Career Programme (PNCM) as well as the introduction of the Universal Evaluation System (see below), the ENAMS are progressively being discontinued. In Puebla, there is not a formal induction programme for new teachers or education leaders entering into their posts and, with some occasional exceptions, professional development options are the same that these available to more experienced professionals.

According to the *Teaching and Learning International Survey (TALIS)*, the percentage of Mexican teachers who report having followed a professional development course during the 18 months preceding the survey is relatively high (92%, with an average across countries of 89%), teachers with higher initial qualifications show higher participation rates (OECD, 2009).²⁰ There is however, some question over the relevance of professional development options as half of them indicated that the training received does not meet their needs and reported that they would have liked to receive more (OECD, 2009). Indeed despite state and federal courses usually being free of charge, in Mexico teachers might have to shoulder the costs of training they actually take: 19% of teachers surveyed paid full costs and 57% some of the costs, which is much higher than the TALIS average (8% and 35%, respectively) (OECD, 2009).

Universal Evaluation System

Currently, about 60% of the total national education staff in basic education are not appraised (SEP-SNTE, 2011). To redress this situation, Mexican Government introduced the Universal Evaluation System in 2012, an in-service teacher appraisal system for the totality of the education workforce, which is due to be fully implemented by 2014. It is intended to serve as a formative and diagnostic appraisal for identifying professional development needs at the individual level and for informing the overall catalogue of courses elaborated by the SEP at the national and local level. This appraisal will be mandatory for teachers, deputy principals, principals and ATPs and it will be applied on a three-year cycle and consider a range of factors (see Table 3.4). The results of student performance, professional preparation and continuous training in the Universal Evaluation System will be considered for the National Teacher Career Programme. This recently introduced Education Reform aims at producing a coherent professional education career structure that articulates the support, evaluation and training systems that should be available for all education staff.

Table 3.2. Factors considered for the Universal Evaluation System

Factors considered	Weight (%)
Student performance: Measurement will be made in a similar way as the National Teacher Career Programme (through ENLACE and other assessments)	50
Professional competencies	
Professional preparation (5%): Measured through specific standardised examinations, undertaken every three years	50
Continuous training (20%): This component will be about "formative pathways focused on opportunity areas identified" (this component will be included during the second phase of the programme in 2015).	
Professional performance (25%): Likely to be assessed through standardised examinations as well (not yet designed) in reference to teaching and school management standards and other instruments defined by SEP (to be included once the standards have been implemented)	
Total	100

Source: Evaluación Universal de Docentes y Directivos en Servicio de Educación Básica, ¿Cuáles son los componentes de la evaluación, cómo y cuándo se aplicarán? www.evaluacionuniversal.sep.gob.mx/tres.htm.

The international context

There appears to be widespread agreement that teacher education has to be conceived as open and dynamic and as a part of a continuous process consisting of four closely interrelated components: i) initial teacher education; ii) induction into the professional cultures of schools; iii) in-service teacher education and continuous professional development; iv) further education (Buchberger et al, 2000). Moreover, it has to be connected to educational innovation (*e.g.* school development and school improvement) and educational research.

Many countries offer different support mechanisms for new teachers during their first years of service (Eurydice, 2002). Supervision, coaching, induction programmes, reduction of workload in initial years, allocating sufficient hours for personal development and using teacher appraisal systems to steer the personal development of teachers are among the policy means proven to be most effective (OECD, 2010; Jensen, B., *et al.*, 2012). In Germany and Japan, once teachers have completed their pre-service training they are closely supervised during the first and/or second years of teaching. During this period, the beginning teacher typically receives a reduced workload, strong mentoring by experienced teachers, and continued formal instruction.

In several higher-performing education systems, beginning teachers are also required to undertake a period of probation, by the end of which they must have confirmed their capability or competence in order to secure their license to teach. This mechanism enables to remove from the posts and from the profession those who are judged to be ineffective and grant or provide eligibility to a permanent post to those who are able to demonstrate their competence. A clear distinction should be made in this context between induction and probation (see definitions in Box 3.3).

Box 3.3. Induction and probation for newly qualified teachers

Many countries have two different parallel processes for new teachers in their first years of service:

Induction: normally understood as a programme designed to support new teachers. Mentoring is usually part of the induction programmes. Mentoring can be defined as the one-to-one support of a novice or less experienced practitioner (mentee) by a more experienced practitioner (mentor), designed primarily to assist the development of the mentee's expertise and to facilitate their induction into the culture of the profession (in this case, teaching) and into the specific local context (here, the school).

Probation: usually defined as a kind of “on the job” qualifying phase that must be successfully completed before the teacher is eligible for a permanent position. Those responsible for assessing beginning teachers during the probation phase are usually not the same individuals (such as mentors) as those who support their induction.

Source: Eurydice (2002), The teaching profession in Europe: Profile, trends and concerns. General lower secondary education. Volume 1: Initial training and transition to working life. Eurydice European Unit, Brussels. Hobson, A. J. et al (2009), “Mentoring Beginning Teachers: What We Know and What We Don't”, Teaching and Teacher Education: An International Journal of Research and Studies, 25/1, pp. 207-216.

Beginner teachers can profit a great deal from mentoring. To ensure mentoring of quality, mentors should be carefully selected, given sufficient time to carry out their tasks and have the opportunity to participate in good preparation programmes (Hobson *et al.*, 2009). Induction and mentoring processes are powerful levers to rethink the entire teaching career as a lifelong learning experience with experienced and new teachers working together, continuously improving their practice and becoming part of a community of learners.

Evidence suggests that school-based capacity development practices are increasingly implemented in OECD countries (OECD, 2010). In addition, new trends in professional development promote collective and collaborative learning through the formation of *networks of teachers*, and *communities of practice* (Wenger, 2001; Imbernón, 2009; Hargreaves, 2003; Lieberman and Wood, 2003). Teacher networks generate other knowledge networks and alter the traditional relationship between knowledge and hierarchy since they propose horizontal forms of training. Communities of practice are an opportunity for teachers to make their teaching more effective, to analyse the socio-cultural contexts of contemporary schooling and seek answers to problems they face in the classroom (See Recommendation 1B in Chapter 2).

High-performing countries focus on the continuous improvement of the entire teaching staff in schools rather than on teacher as individuals. New and more innovative effective training initiatives such as school based development, and peer efforts should be identified, recognised and supported (Aguerrondo *et al.*, 2009). Teachers must develop, beyond their individual capabilities, their professional ones which add to the social asset of schools. To do so, individual courses are not enough, even when meeting institutional needs, and school-based approaches are more effective. For example, teachers can work together and discuss challenges at work (Hargreaves and Fullan, 2012). The experience of

Finland, Singapore, Japan and Canada shows that school-based strategies can create a positive culture in which teachers push and also pull each other into energising improvements where all the staff and therefore all students are bound to learn (Hargreaves and Fullan, 2012).

Strategies for action

3A. Entrust one institution with the responsibility of consolidating professional development opportunities and increase the offer of school-based training

Puebla requires consolidating a more relevant and organised continuous education offer for teachers and education leaders. A clear and effective governance structure is essential to systematise the supply and to guide effectively the school team, teachers and school leaders, to the best existing training options. Puebla should consider the creation of a *one-stop-shop* strategy to systematise and coordinate the supply of continuous education carried out by the federation, the state and the different programmes.

This one-stop-shop strategy for continuous education could either be undertaken by a unit within the SEP-Puebla or an external institution, which could lead to the creation of the “Puebla Institute for Effective Teaching and Professional Development of Teacher and Principal”. While the latter is likely to imply more resources, it can also have a greater impact under certain conditions of efficiency and autonomy. The main responsibilities of this institution would be to:

- *Articulate all the supply of continuous education.* It should provide teachers, school leaders and teaching teams with information about all the courses available, from the National Catalogue, education programmes and relevant options from other providers such as the UPN, *Normales*, SNTE. It should also provide details of the application procedure, its objectives and the financial resources available.
- *Inform educational staff about the most relevant courses for their specific needs.* As the universal teacher evaluation and the schools' institutional evaluation move forward, this organism should be capable of matching recommendations resulting from these assessments with the training supply.
- *Pre-select and evaluate the supply of training courses.* It could also pre-select the education programmes to be considered for certification by the federal SEP. It could also design, monitor and evaluate innovative and more efficient training options that could respond better to the needs of teachers, leaders and school teams.

Puebla should define a strategy for continuous education that should consider the following priorities:

- Continue the current training pathways (*trayectos formativos*) allowing teachers and school leaders to complete specialisations, Masters and PhDs in areas related to their teaching subjects.
- Complement the options for individual teachers with collective and school-based professional development options; and foster strategies of training and support among peers.
- Design and implement induction programmes for new teachers (see Recommendation 3B).

- As universal evaluation and school evaluation move on, this organism should be capable of matching its outcomes with the education needs (see Recommendation 2 as well as 3C).
- Focus on school leaders, supervisors and other education leaders as the professional offers for these groups in Mexico are currently underdeveloped (see more in Recommendation 4).
- Encourage innovation, research & development approaches, and “problem solving” interventions to foster the development of educational innovation (see Recommendation 2D). The focus should be developing innovative pedagogic interventions in schools and school-based academic work.
- Ensure coherence between initial and continuous teacher training and foster co-ordination with universities, and in particular with the UPN, as areas of opportunity to create communities of learning.

Puebla should encourage in-situ learning, training within the teacher’s own institution, to propel institutional change. A concrete way to initiate such actions is using existing education programmes to deliver training in schools to school teams. The PEC programme and others can be used to such purpose. Chile’s *Centro de Perfeccionamiento, Experimentación e Investigaciones Pedagógicas* is a similar government-dependant training and innovation centre that has been in existence since 1967. Another interesting initiative is the Australian Institute for Teaching and School Leadership (see Box 3.4).

Box. 3.4. Encouraging and promoting teacher and school leader excellence in Australia

The Australian Institute for Teaching and School Leadership (AITSL), created in 2010, provides national leadership for the Commonwealth, state and territory governments and promotes excellence in the profession of teaching and school leadership. The Institute's role is to: (i) develop and maintain rigorous national professional standards for teaching and school leadership; (ii) implement an agreed system of national accreditation of teachers based on these standards; (iii) foster and drive high quality professional development for teachers and school leaders through professional standards, professional learning and a national approach to the accreditation of pre-service teacher education courses; (iv) undertake and engage with international research and innovative developments in best practice; (v) administer annual national awards for teachers and school leaders; work collaboratively with government and non-government school systems, key stakeholders including professional associations and education unions, teacher educators, business and school communities, and the Australian Curriculum Assessment and Reporting Authority (ACARA) and Education Services Australia (ESA)

Source : Australian Institute of Teaching and School Leadership, Australian Professional Standard for Principals, www.aitsl.edu.au/school-leaders/national-professional-standard-for-principals/national-professional-standard-for-principals.html, accessed on December 20, 2012.

3B. Provide beginning teachers with intensive support and mentoring by a new cadre of excellent mentor teachers and establish a probation period

Puebla can take the lead with the creation of a high quality formal induction period with substantial support for all beginning teachers.²¹ Puebla can start with those that have obtained a teaching post or a certain number of teaching hours; but it can also consider including those who have not yet permanent posts but are already in the education system. These induction programmes could be amalgamated with, at least, some of the already existing continuous training options, although ad-hoc induction options may have to be created. Box 3.11 summarises the one-year induction programme of Scotland (United Kingdom).

Some experienced Puebla teachers or ATPs should be trained to become mentors (for induction), others to become evaluators (for probation, see below). Creating and training a cadre of mentor teachers is not only key to putting in place a fair system for supporting and evaluating probationary teachers, it can also be a powerful strategy for recognising and rewarding outstanding teachers and extending their influence to other schools and districts. Mentors should be trained on issues such as classroom observation, coaching, evaluation. They would be recognised by peers and new teachers for their valuable knowledge and expertise in these areas and could be sought out for various other leadership roles. Box 3.5 describes selected mentoring programmes from Australia, Chile and Ecuador and Scotland.

Box 3.5. Induction or mentoring programmes from Scotland, Australia, Chile and Ecuador

Scotland - Teacher Induction Scheme. In Scotland, the government established the Teacher Induction Scheme in 2002, a national induction programme for newly qualified Scottish trained teachers which has gained international recognition. It guarantees the offer of a one-year teaching post in a Scottish local authority, with teachers being allocated to one of five local authorities of their choosing. Teachers on the programme have a maximum class commitment time equal to 82% to that of a full-time teacher, allowing additional time to be devoted to their professional development. All have access to the mentoring services of an experienced teacher. By the end of their one-year induction, teachers should be ready to gain full registration with the General Teaching Council for Scotland. During this period new teachers meet weekly with their practice tutor who is an experienced teacher. The work done and the reflections of the first year of practice must be filed in a portfolio or professional notebook, to constitute evidence of their progress and the work undertaken.

Australia - The Teacher Mentor Support Program (TMSP) is a joint initiative run in partnership between the Department of Education and Early Childhood Development and the Victorian Institute of Teaching (VIT). Mentoring offers individualised support to new and returning teachers. It is a reciprocal professional learning relationship between the mentor and mentoree based on what happens in the classroom. Professional growth is supported through strategies such as structured reflective dialogues, where evidence from observations, beliefs and understandings can be reflected upon with a view to improving practice and building teacher expertise. For the mentor, the partnership provides the opportunity to confirm, renew and share their contribution to the profession and the school community.

Box 3.5. Induction or mentoring programmes from Scotland, Australia, Chile and Ecuador (continued)

Chile - Network Teachers to Teachers (Red de Maestros de Maestros- RMM) In 2005, Chile started a process of planning and putting into practice support policies for beginning teachers. In 2008, the Network Teachers to Teachers was assigned the design and implementation of the programme for the insertion of beginning teachers and the training of mentors. This network, founded in 2002, gathers outstanding pedagogic teachers and finances professional support projects trying to strengthen the teaching profession through peer development. Mentors work throughout a school year. Each mentor has a maximum of three beginning teachers and up to 160 annual hours for this task. Mentors provide support through joint class planning with the teachers, observation and feedback analysis of classes, provide overall feedback and carry out reflection work on the classes including the use of portfolios and register notebooks.

Ecuador- Mentoring Programme. Mentors are in-service professors with high grades in the SER Tests (evaluation of teaching performance) or in the SiPROFE courses. They release 80% of their class time to undertake training processes and pedagogic support in class, aimed at teachers (beginners and in-service ones) in institutions whose students have had low grades in the SER tests. They must be substituted those days they act as mentors, where they work as teachers, while exercising these functions. These mentors pass a special process of selection to enter the Mentoring Programme.

Sources: Scottish Government, www.scotland.gov.uk/Topics/Education/Schools/Teaching/; Red de Maestros de Maestros - Chile - www.rmm.cl; The Teacher Mentor Support Program, Department of Education and Early Childhood, Australia, www.education.vic.gov.au; and Ministerio de Educación de Ecuador, Programa de Mentoría www.educacion.gob.ec/formacion-continua/mentorias-siprofe.html.

In parallel to induction, Puebla could take a leading role in the country requiring all new teachers that obtain a teaching post to complete a probation period to a satisfactory standard *before* obtaining a permanent post. OECD (2010; Santiago *et al.*, 2012) also recommended Mexico to create a probation period in which beginning teachers are expected to demonstrate in practice that they are capable of effectively facilitating student learning and successfully undertaking other aspects of their teacher role. The ideal length of the probation period for newly qualified teachers should be one or two years at least (OECD, 2010). OECD team understands that under Mexican labour law a six-month probation period would be possible. This is short by international standards, but it suggests a place to begin with while pushing for a more extended period in the future.

Probationary periods for new teachers normally should involve various forms of performance-based assessment such as direct observation of the candidate's teaching and/or assessment of documentary evidence through which beginning teachers need to demonstrate their teaching capability against a set of standards. In England, for example, newly qualified teachers are observed six times (normally during the first three terms of their first teaching post), while their professional attributes in and out of the classroom are also monitored. Those who fall short of the standards and do not demonstrate sufficient potential for meeting them in the foreseeable future should be not be allowed to teach, although an extension of the probationary and induction programmes (for example, into a second year) could be granted if they are judged to have the potential. Only when

teachers have successfully met the standards should they become eligible for permanent status.

As soon as possible, teacher induction and probation should be part of a broader Teacher Evaluation strategy. Should these initiatives be effective, they would need careful implementation. A transparent structure, clear articulation with the *Evaluación Universal* and clear standards are key for their success.

3C. Further implement and refine *Evaluación Universal* for professional development

Education staff appraisal is fundamental to identify improvement opportunities and enable the government, the education leaders and teachers to develop more effective strategies to improve student learning. Thus, Puebla may want to continue its pro-active role in implementing the *Evaluación Universal* system for all staff and to ensure that it is quickly fully integrated in the state education system and is perceived as a coherent whole.

However, the universal teacher evaluation should be refined to provide a more accurate appraisal of what improvement is required. Puebla should continue to participate in the initiative at the federal level aiming at the improvement of the *Evaluación Universal* itself. In the midterm, it should evolve into an instrument in which ENLACE's students results would have less weight and other components are considered (Santiago et al., 2012).

Professional development opportunities should be aligned and closely linked with the results of the appraisal and the standards set (see Recommendation 1A). Therefore, staff appraisal could be one of the main areas of work of the recommended state-level evaluation agency or institute (see Chapter 2, Recommendation 4D) and the findings should feed into the work of the institution that articulates continuous professional development (see recommendation 3A).

Recommendation 4: Better select and prepare current and future school leaders and supervisors

The Puebla context

In Puebla (and in the rest of the Mexican states) school principals and other school leaders are selected through the Mixed Commission SEP-SNTE of the *Escalafón* system. Education leaders are selected mainly following criteria such as formal qualifications and seniority which bear little relationship to the qualities needed to be an effective principal. However, in practice, many nominations occur unilaterally as they are appointed by SNTE. Appointments are not transparent enough; many follow unequal selection criteria, and are not related with specific schools needs. As for teachers, in 2008 a new test was proposed for the selection of school principals as part of the Alliance for Quality Education (*Alianza por la Calidad de la Educación*) agreement. However, this initiative did not gain ground partly because of the complexity and cost of regularising *commissioned teachers* in leadership positions and as a consequence the test has not been applied yet.

Consolidating a high level body of school leaders is challenging. Based on their own evaluation, school principals in Mexico on average show relatively stronger tendencies towards administrative leadership than instructional leadership. Principals in Mexican schools in which teachers' innovative teaching practices are important to the evaluations

tend to take more of an instructional leadership style of management (this is also the case for the Flemish Community of Belgium, Bulgaria, Estonia, Korea, Norway, Portugal and Turkey) (OECD, 2009).

In addition to the lack of clear standards, poor training and a questionable selection process, Puebla (like the rest of Mexico) faces two structural challenges. First, the existence of *commissions* to undertake school leadership tasks, which generate confusion, inefficiency and result in little recognition and transparency. Second, despite the fact that the school leadership force is ageing the incentives are insufficient to encourage retirement. At the end of the career, the final salary can be much higher than the retirement benefits that they would be due and, therefore, many teachers and school leaders prefer to stay in service, to the detriment of education quality.²²

There is no maximum age to stay in-service; in other words, there are no legal mechanisms to force retirement. Principals in Puebla are older than the national average: 22.6% are less than 40 years old (national average is 29.1%), 47.4% are between 40 and 49 years old (national average is 44.4%) and 30% are 50 or more years old (national average is 26.5%). A parallel situation could occur with supervisors and other school leaders²³ (Proyecto Educativo, 2012). Data from federal-SEP shows that Puebla has 3 139 education staff aged 58 years old or more. Financially, this is the equivalent of 5 204 posts for new teachers. This means that one current post would cover or 1.7 new posts (2.1 is the national average). Education employees aged 61 years old or more are 1 681, which is equal to 2 777 new posts. In other words, one current post would cover 1.6 new posts (2.2 is the national average) (SEP, 2012).

The international context

Countries that have achieved good results, have established transparent selection procedures of their school and education leaders. Such processes prioritise professional competences of candidates and select them by clear and announced criteria, or use such criteria to make up lists enabling those interested to step forward (see Box 3.6). It also shows that, though selection is important, it is essential to accompany the process of professional development of principals and supervisors, (Pont *et al.*, 2008; OECD 2010). In these countries school leaders and those in charge of assessing and inspecting schools have assistance and training for their professional development. Indeed, leadership development needs to be seen as a continuum by: 1) encouraging leadership initial training; 2) organising induction programmes; and 3) ensuring in-service training to cover need and context (OECD 2008).

Box 3.6. Preparing school leaders for a changing world

The study *Preparing school leaders for a changing world* (Darling-Hammond *et al.*, 2007) examines eight exemplary pre- and in-service school-principal development programmes representing a variety of approaches, designs, policy contexts, and partnerships between universities and school districts in the United States. In several cases, pre- and in-service programmes created a continuum of coherent learning opportunities for school leaders. All of the pre-service programmes in the sample shared the following elements:

- i) A comprehensive and coherent curriculum aligned with state and professional standards which emphasise instructional leadership;
- ii) A philosophy and curriculum emphasising instructional leadership and school improvement;
- iii) Active, student-centred instruction that integrates theory and practice and stimulates reflection.
- iv) Faculty who are knowledgeable in their subject areas, including both university professors and practitioners experienced in school administration;
- v) Social and professional support in the form of a cohort structure and formalised mentoring and advising by expert principals;
- vi) Vigorous, targeted recruitment and selection to seek out expert teachers with leadership potential;
- vii) Well-designed and supervised administrative internships that allow candidates to engage in leadership responsibilities for substantial periods of time under the tutelage of expert veterans.

Rather than offering an array of disparate and ever-changing, one-off workshops, these in-service professional development programmes had a clear model of instructional leadership. Three features characterised districts' efforts: (i) A learning continuum that operated systematically from pre-service preparation through induction and continuing careers and included using mature and retired principals as mentors; (ii) Leadership learning that is organised around a model of leadership and grounded in practice, including analyses of classroom practice, supervision, and professional development using on-the-job observations connected to readings and discussions; and (iii) Collegial learning networks, such as principals' networks, study groups, and mentoring or peer coaching, that offer communities of practice and support for problem-solving.

Source: Darling-Hammond, L., LaPointe, M., Meyerson, D., & Orr, M. (2007), *Preparing school leaders for a changing world: Executive summary*. Stanford, CA: Stanford University, Stanford Educational Leadership Institute.

The recent McKinsey report on how the best school systems in the world keep on improving, observed 20 countries on all continents which have significantly improved over the past 6 years, each with very different starting situations. It concluded that new practices must focus in the teachers to sustain improvements through: (i) establishing collaborative practices within and among school units; (ii) achieving a permanent leadership; and, (iii) developing mediation between schools and the political ruling centre (Barber and Mourshed, 2007). School principals play a key role in both the first and second strategy, while supervisors can take a leading role in the third one and play a key role in the other two.

Strategies for action

4A. Establish a competitive and transparent selection process for school principals

If Puebla (and Mexico) aims to obtain better education outcomes, better school and education leaders are necessary, leaders capable of progressively transforming the operation of schools and the support of their teachers to respond to the students' needs. Puebla could take a step forward in being the pioneer in Mexico by implementing a more efficient and transparent selection system for school principals.

One option would be to continue exploring the creation of a *concurso* based on a competent-based examination, something already proposed by the federal Government and SNTE in the *Alianza por la Calidad de la Educación* in 2008 and considered in the recent constitutional reform launched by the federal government and approved by the Puebla Congress. Similarly to the teaching post (see Recommendation 2B), this initiative could imply the development of clear reference standards and selection procedures.

Another option is to explore more efficient systems such as the selection from a shortlist of competent candidates. The OECD (2010) recommended Mexican states to explore a system of selection of principals based on shortlists of candidates, who meet the standards for school leadership. OECD suggested that when there is a vacancy, there should be an objective procedure defined by the State to find suitable candidates, which take account of tests, portfolios and their track record. Then an appointment panel should be convened. It is also desirable that the school community is involved in choosing the director, possibly through representatives of parents or the school council. The appointment would have the task of deciding which candidate will be best for the school and its needs. OECD suggested that the appointment panel include representatives from: *i)* the regional administration; *ii)* teachers at the school; and *iii)* parents of pupils attending the school.

Most OECD countries have transparent processes of selecting school principals. In Victoria (Australia), the Effective Schools Model managed by the Education Department has stated that rigorous, transparent and well defined selection processes are crucial for building and sustaining successful schools and selection to a principal position shall be determined solely on the basis of merit assessed against the selection criteria for the position. Selection criteria are based on eight characteristics that correlate to improved student outcomes. They have a set of guidelines that bring together the key aspects of recruitment and other human resources policies to assist school councils and principal selection panels in the selection of a principal for a government school. The selection panels are supported by a comprehensive training programme that includes: roles and accountabilities of principals; selection process; principles of merit based selection; anti discrimination legislation; developing behavioural questions for interview purposes; and identification and use of appropriate additional selection tools (Victoria Department of Education and Early Childhood Development, 2012).

In Minnesota (United States), the selection process for principals is based on a candidate's ability to describe situations, tasks, actions, and results based on their past school leadership experiences under the Project STAR (Situation, Task, Action, Result) and interviewers receive a toolkit with information (Minnesota Department of Education, 2012). In New York City, a Principal Candidate Pool selection process for public schools was created to ensure the selection of outstanding qualified leaders to become school principals, with a rigorous selection process identifies the candidates' readiness for the

principal-ship and ability to impact student achievement. All candidates for principal positions must first gain entry to the Pool. The recruitment process occurs whenever there is a principal or an assistant principal vacancy and is driven by each school community. The Office of School Leadership provides technical support throughout the process, including interpretation of the regulations. Also, members of the pool and current school leaders can access ongoing training and resources to exploit their strengths in key five competencies (The New York City Department of Education, 2012).

In addition, Puebla should explore ways to open supervisors and superintendent posts for competition as they have a very important role in providing leadership and both supporting and challenging the leaders of their schools. In line with their new role in education (see Recommendation 4B), supervisors and superintendents should be selected on the basis of their potential to raise school performance rather than simply considering their capacity as administrators.

4B. Develop specific training and support mechanisms for new and current school leaders, in-service supervisors and other education leaders in line with their new role in promoting learning

Education leaders should be prepared for and supported in their broad range of tasks, particularly regarding their role in fostering student learning. Puebla should provide new and current education leaders with opportunities to further develop their skills with specific training, developing contextualised strategies and promoting networks of support. One option could be to create a specialised training institution for education leaders, which should work closely with the institution that takes responsibility for professional development (see Recommendation 3A).

Puebla should develop specific initial school leader preparation and induction programmes for new principals; and continuous education for those already in office (see Recommendation 3B). In school leadership development programmes, effective training and preparation for directors usually involves both on-the-job training and joint events for a group of leaders. The workplace element requires a mentor, normally the principal, who would ensure that the aspiring principal gained experience in the main elements of the school leadership role set out in the Standards. The off-site aspect would bring trainees together for development sessions in which good practice is shared and technical aspects explained. There are already some relevant training initiatives for school leaders in parts of Mexico, including the states of Aguascalientes, Jalisco and Yucatán.

Supervisors and other support staff should go through mandatory pre-service and in-service training on educational leadership, evidence-based evaluation for improvement at school level, and the management of change. Supervision education should imply training modules with different components, such as: *(i)* face-to-face training sessions (for example on evaluating the quality of learning in classrooms), where consistency can be nurtured through discussion; *(ii)* specific tasks or case-studies based on actual school situations, and backed by evidence; *(iii)* theoretical elements to underpin the practice (but with a much lesser time component, shifting the balance of staff development from the theoretical to the practical).

Longer-established inspectorates, such as those in the Netherlands, Flanders and the countries of the United Kingdom, devote considerable amounts of time to staff development, which is replicated in most of the more recently formed inspection agencies, such as in a number of German Länder. In the most successful arrangements,

inspectors are trained alongside school principals, so that there is a common understanding of principles and opportunities to develop a common language within which to discuss quality.

Some of the issues Puebla should resolve how to identify the type of training needed in each school, ensure that relevant courses are created and considered for *Carrera Magisterial* and *Escalafón*, ensure that all, current and future principals, will have access and participate in these options. Due to the limited resources, Puebla would probably need to decide where to invest more: in initial director and education leaders training or in continuing training of its current school principals and education leaders. The estimation of the age and number of school principals and a diagnosis, as those (as suggested in Recommendations 1 and 2), can help understand which of the two would have broader results across the system. Many of these challenges could be the responsibility of the new governance structure suggested in the policy option 3A.

4C. Regularise commissioned teachers in school principal positions and support voluntary early retirement of education leaders

The forthcoming demographic change provides an opportunity to strengthen the education staff of Puebla. The decreasing enrolment in basic education reduces the total number of teachers, principals and education leaders needed. As a response, Puebla should design long-term strategies to reduce the number of graduates (see recommendation 2), regularise staff commissioned to leadership positions and 3) propose voluntary early retirements in order to improve the quality of the system without jeopardising the education services and labour rights of individuals.

The existence of hundreds of school leaders without a formal position and the inexistence of an efficient policy for teachers and school leaders' retirement challenges the creation of a strong leadership force in Puebla and may discourage competent future aspirants. The policy responses to this are complex and demand a comprehensive and long term vision:

- *More transparency, clarity and order in the distribution of posts.* In the long term post allocation rules should follow a simple principle: each individual should have a post that matches his/her real role, which may lead to the removal of permanent “commissions”.
- *Develop and implement a plan to regularise current commissioned teachers and principals to leadership positions* in coordination with federation. For example, a specific and independent commission could propose concrete actions. Also, Puebla could require certification, appraisal and specific training as a requirement for those who want to apply for regularisation in order to ensure their preparedness. Regularisation might require additional financial resources (as it would imply a salary increase) but these are likely to be off-set by efficiency gains in the midterm.

Leading the education system demands great expertise, but also energy and capacity to meet the increasing challenges that schools are confronted to in Puebla and younger and better trained professionals might out perform older ones. Puebla could consider designing a plan to:

- *Encourage earlier and voluntary retirement*, which might also reduce the costs in the mid-term as the weight of seniority is still considerable in the Mexican salary regime. Puebla can learn from the successes and pitfalls of similar initiatives introduced by the

federal government, other Mexican states and other countries, such as England or the state of Saskatchewan in Canada (see Box 3.7). In 2003, The Secretary of Finances and Public Credit launched an initiative of voluntary retirement, in which posts were not withdrawn but frozen and reactivated after a predetermined number of years, but oversubscription led to the closure of the programme. In 2008, a similar policy was implemented but with more restrictive conditions for eligibility. In February 2012, a voluntary retirement initiative was launched in the Teacher Colleges of Guerrero but faced great obstacles in its implementation.

- *Propose veteran staff to positions where their experience could be of particular value.* For example, outstanding teachers or those specialised in specific domains could work as mentors, advisors or occasional teachers of teachers. Chile's Teachers of Teachers Network is a relevant experience. Also, many *Normales*, specific schools and SEP-Puebla can benefit from their experience.

Box 3.7. Early Retirement Incentives in Saskatchewan (Canada)

Boards of Education in Saskatchewan have in place or are being asked to establish early retirement incentive programmes. In Saskatchewan there are a variety of early retirement incentives available to teachers who are eligible to retire with an unreduced allowance. In accordance with the Teachers' Superannuation Act teachers are eligible to retire at: (i) 65 years of age with one year of contributory service, (ii) 60 years of age with 20 years of service, (iii) 60 years of age or any subsequent date when the sum of the teachers contributory age and service equals 85, (iv) 55 years of age and with contributory service equal to 85, or any age when the teacher has completed 30 years of contributory service.

In the last 10 or so years Boards of Education have offered a variety of early retirement incentives including the following: (i) Rehiring superannuated teachers on part time contracts; (ii) Provision of a base cash incentive specified in policy or in contract; (iii) Provision of an incentive based on years of service - usually a percentage of salary in the final year of employment or a number of days of salary per year of service. (iv) Provision of a cash settlement based on accumulated sick leave; (v) Rehiring for a guaranteed number of substitute days; (vi) Combinations of the above. Most Boards in Saskatchewan choose to provide a monetary incentive rather than rehiring superannuated teachers.

Source: Fulton, M. (1996) "Early Retirement Incentives", *SSTA Research Centre Report No. 96-11*, Educon Services for the SSTA Research Centre, www.saskschoolboards.ca/old/ResearchAndDevelopment/ResearchReports/HumanResources/96-11.htm.

Notes

1. This important variation in the number of preschool teachers is explained by the inclusion of this sector among the compulsory education levels in 2002.
2. The Expenditure Budget of the Federation (PEF) published by the Federal Congress in 2009 summons the states to publish the payment list funded by the Fund of Basic Education Contributions (FAEB, fund used by the Federation to cover its obligations pertaining education federalization). In 2010 the SEP published exclusively the FAEB information, excluding both the teachers paid with states' resources, as well as

the “commissioned” teachers, who are not in charge of classes but covering another position in the education system or in the Syndicate. Thus this census list was imprecise.

3. Teachers can have a “morning” post and an “afternoon” post. They can also have a or several posts consisting of a given number of teaching hours (e.g. 10 weekly hours in one lower secondary school, 15 weekly hours in another lower secondary school). A teacher can also be a technical pedagogical advisor (ATP) in the morning and a school director in the afternoon, and vice versa.
4. Applicants for preschool and primary school need to be graduated from any Escuela Normal in the state (public or private). For lower secondary schools, applicants can also have diplomas from Institutos tecnológicos, Universidad pedagógica (UPN), the BUAP and even from a few private universities of Puebla in the case of specialized programs, like special education and arts.
5. In 2009, as part of the Alliance for Quality in Education (ACE), the government established the National System of Training and Professional Improvement for In-Service Teachers Programme (*Programa del Sistema Nacional de Formación Continua y Superación Profesional de Maestros de Educación Básica en Servicio*, PSNFCSP) which aims to (i) co-ordinate the supply of training opportunities by different institutions; (ii) analyse the development needs based on results from standardised assessments; (iii) propose new standardised assessments as needed; (iv) establish performance profiles and standards; and (v) ensure transparency and accountability in the use of resources. The PSNFCSP involves universities, teacher colleges (*Normales*), international organisations, government and union (among other groups) in developing quality professional development programs, through the *National Catalogue of Continuous Training and Professional Betterment for Basic Education*.
6. This estimation was made by the Proyecto Educativo based on statistics by the Presupuesto de Egresos de la Federación y el Sexto Informe de Labores (Report on Expenditures of the Federation and the 6th Workplan report) of the SEP.
7. Reglamento de Escalafón de los Trabajadores al Servicio de la Educación Pública, 1973.
8. In Mexico the overall teaching body in basic education (including principals, supervisors, ATPs, etc.) is around 1 175 000 persons. About two-thirds of them are involved in CM, but almost half of these do not complete the process partially due to administrative reasons. As a result, in practice, about 60% of the total education staff in basic education does not go through an appraisal process (OECD, 2010).
9. Policy-makers, academics and civil society organisations have debated the issue with limited participation of teachers or school principals and the proposals are not generally known by the educators and the society in general (Barrera and Myers, 2011).
10. These include: a) the proposal of a Mexican Official Norm (*Norma Oficial Mexicana*) for Education Quality presented by the SNTE; b) the project to formulate standards for teachers, management and curricula, sponsored by private sector, the SEP, the SNTE and the Organization of Ibero-American States; c) the diagnosis and recommendations made by the OECD to the federal SEP (OECD, 2010; OECD, 2011b); and d) the Agreements between the SNTE and the SEP to reform the Teacher College Program and to create the Universal Evaluation (Barrera and Myers, 2011).¹⁰ The “National Accreditation System for Basic Education Schools” (*Sistema Nacional*

de Acreditación de Centros Escolares de Educación Básica, SNACEEB) aims at establishing management standards related to school self-evaluation, to introduce a more formalised approach to external school evaluation and to assess whether these standards have been reached (Santiago, P. *et al.*, 2012).

11. The “National Accreditation System for Basic Education Schools” (*Sistema Nacional de Acreditación de Centros Escolares de Educación Básica*, SNACEEB) aims at establishing management standards related to school self-evaluation, to introduce a more formalised approach to external school evaluation and to assess whether these standards have been reached (Santiago, P. *et al.*, 2012).
12. The need of a Guide emerged when an expert group set up to analyze the problem (consultants, SEP officials and supervisors) identified the multiple sources of norms for the supervisors: laws and rules from different authorities (federal SEP, state SEP, federal and state laws, some of them published decades ago) that are supposed to be followed. A previous attempt to concentrate the responsibilities of supervisors was made in 2010, but the result was a rather insufficient Manual with vague elements. The first step towards the new Guide was an online survey for all supervisors, which was answered by 399 of them (out of 792); the survey revealed perceptions and needs of supervisors. Then, the expert group carried out meetings with the different offices of SEP dealing with supervisors (CORDES, Legal affairs, Level directors, etc.) to precise the processes in which the participation of supervisors was necessary. With these elements, a draft of the new Guide is being written and will be sent to the participating offices before circulating it among a group of supervisors for a pilot programme.
13. In the United States, the National Board of Professional Teaching Standards recommends five core areas: (i) teachers are committed to students and their learning; (ii) teachers know the subjects they teach and how to teach those subjects to students; (iii) teachers are responsible for managing and monitoring student learning; (iv) teachers think systematically about their practice and learning from experience; and (v) teachers are members of learning communities.
14. The Scottish government has at present a special site in their webpage for the Revision of the Professional Standards through which they ask teachers and other actors to take part in the online consultation (Teaching Scotland’s Future, 2011). Chile had long consultation processes with teachers and school leaders to create their *Marco de la Buena Enseñanza* y el *Marco de la Buena Dirección*.
15. In one of the *Normales* visited, a full-time post (40 class-periods) only implied 12 hours working with students and the purposes of the remaining time were not specified, whereas in other institutions a similar post (42 class-periods) implied 35 hours teaching students.
16. Concretely, the assessment for accreditation of Teacher Colleges in Puebla will look into: (i) progress in the implementation of the Regulation of Application, Continuity and Promotion of the Academic Personnel; (ii) reinforce the technological infrastructure of the Teacher Colleges; (iii) be efficient in the service of internet in the Teacher Colleges and in the areas of the Secretary of Public Education; (iv) improve the communication between the Teacher Colleges and the Continuous Education services; (v) improve evaluation of services and (vi) consolidate the systematisation of the administrative and academic information in the areas of school management, human resources, financial resources and monitoring of graduates (Proyecto Educativo, 2012).

17. The Ministry of Education in Chile implemented, during the year 2010, the Vocation to Teach Scholarship (*Beca Vocación Profesor - BVP*), whose major objective is to encourage youngsters who achieve high scores in the University Selection Test (*Prueba de Selección Universitaria - PSU*), to take up careers of pedagogy, by funding their studies. In the year 2011, the proportion of registration in pedagogy coming from the best 30% of the PSU results was successfully increased from a 10.7% between 2007-2010 to 18.1%. On average, the increase was of 13 points (grades) in all the pedagogy careers and of 27 in the careers eligible to BVP. Increases were larger in public municipal institutions. Nevertheless, the effect of this scholarship in the system is still limited, as only 40% of the registered students in teacher training belong to the careers eligible to BVP, either because others would rather not participate or because they did not comply with the high quality requisites to do so (Alvarado, Duarte, Neilson, 2012).
18. The Irish Initial Teacher Education: Criteria and Guidelines for Programme Providers specify that all teacher education providers should facilitate student active engagement in their learning, thus providers should i) integrate theory and practice in a way that is meaningful for student teachers, ii) achieve coherence between the HEI-based programme and school placements, iii) strike an appropriate balance between taught, facilitated and independent learning time, iv) promote reflection, discussion, simulation and analyses of cases and situations, v) involve student teachers, through experiential learning, in activities similar to those they will use with their students, and vi) model the active teaching methodologies they wish student teachers to emulate (Teaching Council, 2011).
19. Most countries that have increased students' performance have invariably introduced Teacher Certification and re-certification mechanisms, such as the United States since 1984 (Georgia and South Carolina), Hong Kong since 1994, United Kingdom and Chile, since 1996, and South Africa, since 1997 (Aguerrondo, 2004).
20. "Courses and workshops" attendance (94%) had the highest participation rate (OECD, 2009). Indeed, Mexico also has more than twice the TALIS average number of days of professional development across teachers (34, compared to 15 for the TALIS average).
21. Note that the creation of a high quality induction programme for all novice teachers had already been recommended to Mexico. For further information see OECD (2010) and Santiago *et al.* (2012).
22. Education workers are regulated, like other state employees, by labour laws (ISSSTE law). All education employees receive a base salary and additional financial compensations, which result in a final salary. Generally, the base salary does not exceed 10 times the minimum wage (about MXN 18 000 a month) and financial compensations can be even higher than the base salary, particularly at the end of the career. For instance, even though it is not a common case, those taking up the Carrera Magisterial may reach that maximum rate in only 16 years. Accordingly to the ISSSTE Law, retirement benefits are calculated based on the base salary and are independent of the final salary.
23. The scarce data available in education for supervisors is quite different. A survey on the whole of Mexico made in 1997 accounts for 80% of general supervisors between 36 and 55 years old, 40% of the former and 85 of the latter are over 46 (Calvo *et. al.*, 2002). In 2008, primary education supervisors were surveyed in Hermosillo, Sonora (12 women and 12 men) whose ages went from 44 to 63, which indicates an average (no statistically representative) of 50 years old (Ramos and Vega, 2009).

Annex 3.A1. Standards for teachers, school leaders and supervisors in selected countries

Box 3.A1.1. Professional Teaching Standards - NSW Institute of Teachers, Australia

The Framework comprises four key stages, designed as a foundation for the future accreditation of teachers:

Graduate teacher - Graduate teachers are beginning their teaching career in NSW. They have undertaken an approved programme of teacher preparation or its equivalent elsewhere. These teachers identify their development needs and seek advice and support from colleagues. They have high expectations of themselves as professional learners and for the learning of their students. They have the commitment, enthusiasm and interpersonal skills to assume a professional role within schools and their broader communities and to contribute to the operations of a school as a whole.

Professional Competence - Professionally competent teachers have demonstrated successful teaching experience. They have met the standards for professional competence. They effectively monitor, evaluate and plan for learning. They are able to tailor teaching programmes to meet the needs of individuals and groups within the class. These teachers work collegially and in teams to further enhance their professional practice. They are effective members of a school and its broader community and interact effectively with all those involved.

Professional Accomplishment - They are highly accomplished and successful practitioners. They are recognised by other teachers as having in-depth subject knowledge and pedagogy. They engage in educational and professional discussions and debates. They recognise their role in contributing to the professional learning of others including mentoring beginning teachers. They communicate effectively to diverse audiences. They interact professionally with the community.

Professional Leadership - These teachers have a record of outstanding teaching. They are committed educators who can articulate a vision of education to their students, peers, the profession and the wider community. They may be employed in formal leadership positions within schools. They are knowledgeable about the latest developments in pedagogy and can apply those developments to improve student learning. They have outstanding interpersonal and leadership skills. They engage in professional learning and assist and support the professional learning needs of others, particularly induction programmes for beginning teachers. They communicate effectively with the community to support the development of the school and promote *student learning*.

Source: New South Wales Institute of Teachers, Australia www.nswteachers.nsw.edu.au.

Box 3.A1.2. Leadership Frameworks in Chile and Ontario (Canada)

Good Leadership Framework: Criteria for Professional Development and Performance Evaluation - Chile

Leadership: incorporates skills and competences to give directionality and coherence to the institutional education project

Curricular Management: the major goal of every education institution is the learning of its students and the implementation and evaluation of the curriculum. Competences involved account for the principal's ability to ensure effective learning in the institution he leads, enclosing both his own culture and the education project.

Management of Resources: refers to the management of the hiring, distribution and articulation of human, financial and material resources needed to achieve the goals of learning and development of the school.

Management of the Organizational Climate and Relations with Community: refers to the generation of adequate organisational climates to empower the education project and the learning achievements of its students. The selected criteria foster the collaboration within the institution and the framing of support networks to itself in its environment.

Leadership Framework for Principals and Vice-Principals - Ontario (Canada)

Setting directions: The principal builds a shared vision, fosters the acceptance of group goals and sets and communicates high performance expectations

Building relationships and developing individuals: The principal strives to foster genuine trusting relationships with students, staff, families and communities, guided by a sense of mutual respect. The principal affirms and empowers others to work in the best interests of all students.

Developing the organisation: The principal builds collaborative cultures, structures the organisation for success, and connects the school to its wider environment.

Leading the instructional programme: The principal sets high expectations for learning outcomes and monitors and evaluates the effectiveness of instruction. The principal manages the school effectively so that everyone can focus on teaching and learning.

Securing accountability: The principal is responsible for creating conditions for student success and is accountable to students, parents, the community, supervisors and to the board for ensuring that students benefit from a high quality education. The principal is specifically accountable for the goals set out in the school improvement plan.

Source: MINEDUC, Marco para la Buena Dirección, Criterios para el Desarrollo Profesional y Evaluación de Desempeño (*Good Leadership Framework. Criteria for Professional Development and Performance Evaluation*) <http://www.cpeip.cl/usuarios/cpeip/File/Documentos%202011/marcobuenadireccion.pdf>; Ministry of Education, Ontario, Preamble to the Leadership Frameworks for Principals and Vice-Principals and for Supervisory Officers, www.edu.gov.on.ca/eng/policyfunding/leadership/PVPLeadershipFramework.pdf.

Box 3.A1.3. What are the principles of school inspection in UK?

School inspection acts in the interests of children, young individuals, their parents and employers. It encourages high-quality provision that meets diverse needs and fosters equal opportunities. School inspections will:

Support and promote improvement by:

- establishing a clear standard for an acceptable standard of education – only a ‘good’ school is good enough
- adjusting the focus and type of inspection to have the greatest impact
- clearly identifying strengths and weaknesses
- identifying precise actions to underpin recommendations
- explaining and discussing inspection findings with those whose work has been inspected
- monitoring the weakest schools, providing challenge and support to senior leaders, staff and those responsible for governance

be proportionate by:

- adjusting the frequency of inspection having regard to previous inspection outcomes and risk assessment
- deploying resources where improvement is most needed, or where inspection can add most value

focus on pupils’ and parents’ needs by :

- taking account of pupils’ and parents’ views in the planning and conduct of inspection and drawing on them to inform inspectors’ judgements and the outcomes of inspection
- minimising risk to children, young individuals and adults by evaluating the effectiveness of schools’ procedures for safeguarding
- evaluating the extent to which schools provide an inclusive environment which meets the needs of all pupils, irrespective of age, disability, gender reassignment, race, religion or belief, sex, or sexual orientation

focus on the needs of schools by:

- providing high-quality and timely communication with schools
- making use, as far as possible, of the existing data, documentation and systems of the schools inspected and avoiding placing unnecessary burdens on them
- taking account of schools’ self-evaluation

be transparent and consistent by:

- making clear and transparent judgements based on sound evidence
- inspecting and reporting with integrity
- having clear evaluation criteria, procedures and guidance that are well understood by schools and users and that are readily available

be accountable by:

- reporting the outcomes of inspection without fear or favour
- publishing clear, accurate, timely reports that provide parents and prospective parents with an authoritative, independent assessment of the quality of education provided by the school
- gathering the views of pupils and parents and those who have a significant interest in the school to inform inspection

demonstrate value for money by

- targeting inspection resources and deploying them effectively and efficiently
- evaluating the outcomes and processes of inspection and making improvements where necessary.

Source: OFSTED (Office for Standards in Education, Children’s Services and Skills) (2012), The framework for school inspection, www.ofsted.gov.uk/resources/framework-for-school-inspection-january-2012.

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Chapter 4.

Improving upper secondary education in Puebla

Puebla has been very active in expanding access to upper secondary education: a decade ago created the Bachilleratos Generales, which cater half of the student population, and today still continues to increase coverage by introducing an innovative type of digital schools in rural areas. Upper secondary education is now mandatory nationwide, with universal coverage to be achieved by 2021-22, but the road to improvement is challenging. Weak system-wide leadership and a multiplicity of providers have resulted in inefficiencies and quality concerns. Dropout in basic education remains a bottleneck for raising enrolment in upper secondary education and weak support and guidance mechanisms as well as high opportunity costs to stay or return to education fuel non-completion.

To enhance the access and raise the quality of upper secondary education, this chapter looks into policies to:

- ▶ *Improve governance mechanisms to ensure that a coherent and high-quality upper secondary education is accessible to all.*
- ▶ *Raise the quality of upper secondary education, focusing on teachers and Bachilleratos Generales, and increase the relevance of vocational programmes.*
- ▶ *Promote access to and ensure completion of upper secondary education, particularly among disadvantaged students.*

Knowledge economies require young people to gain more and new skills when they leave school and enrol in further studies or labour markets. Upper secondary education is increasingly considered a fundamental step in this process with an ever-increasing pressure for countries to provide universal access. Mexico has recently approved legislation to make upper secondary compulsory from the school year 2012-13 and to provide universal coverage by 2021-22 (Camara de Diputados, 2012). Other OECD countries (e.g. different Australian states, England, the Netherlands and Portugal), have also recently raised the compulsory school-leaving age to ensure that students attend upper secondary education. However, raising the compulsory age in itself is unlikely to immediately translate into higher attainment rates. Many countries have also implemented a broad array of policies to tackle drop-out as well as to improve the quality and relevance of the education provided at this level.

Puebla has been very active in improving access to upper secondary education. A decade ago, the state took the lead in the expanding the number of upper secondary schools in response to increasing student numbers, and is now piloting an innovative type of provision to expand access in rural areas. Today, Mexico and the state of Puebla see upper secondary education as a strategic lever to improving human capital development; integrating many social groups into the formal economy and expanding lifelong learning opportunities. However, ensuring universal coverage requires taking action in response to high socio-economic and territorial inequalities. In addition, the large number of providers hinders the ability of the state to successfully meet this challenge.

A complex system

Weak system-wide leadership and many providers

In Mexico, upper secondary education has not traditionally been given the same political and budgetary importance of basic and higher education. The federation only began to look into increasing upper secondary provision in the early 2000s but allocated few resources to achieve this (Proyecto Educativo, 2012). In contrast, Puebla, as well as other states, took a very active role. The state created new schools, *Bachilleratos Generales* (General Upper Secondary Schools), co-financed by the municipalities: the state would pay the teachers, and the municipality would provide the infrastructure and maintenance (Proyecto Educativo, 2012).

Upper secondary education in Mexico and Puebla lacks an effective leadership and collective vision, which results in and is reinforced by the existence of a large number of upper secondary providers, the lack of a common identity, clear objectives and effective co-ordination mechanisms. Each provider is responsible for a number of schools, has its own logic and objectives, and constitutes itself as a separate educational entity. While the differentiation between providers has decreased over time, there are still important differences in size, particularly in terms of the number of students and schools (see Figure 4.1 and Annex 4.1).

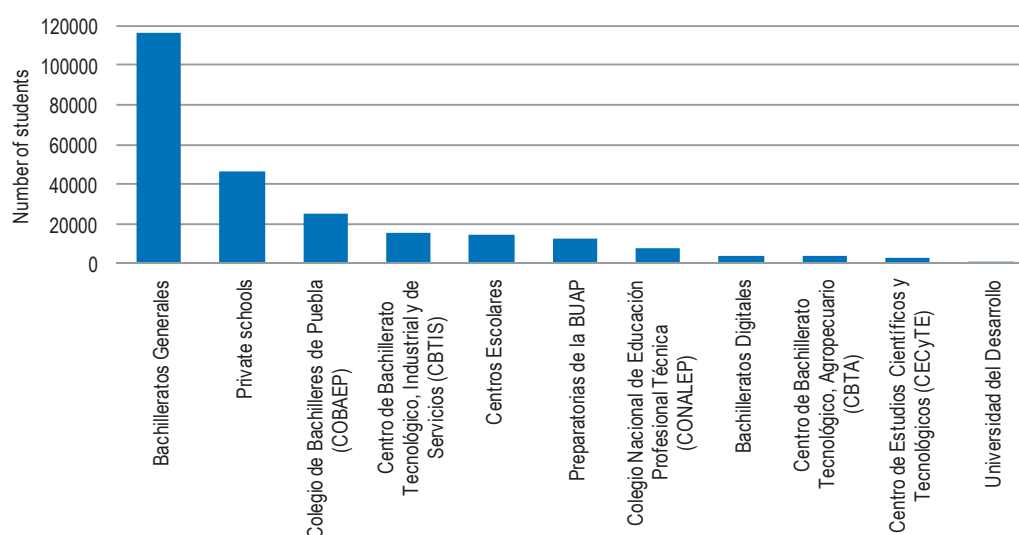
The main features of the provision of upper secondary education services are (full name for institutions is shown in Annex 4.1):

- The state directly co-ordinates and supervises all the local providers, including some private institutions; the federation administers directly some providers (*i.e.*, DGETI, DGETA), and other institutions are autonomous (*i.e.*, BUAP) (SEP-Puebla, 2012).

- Public providers may be financed by federal sources (DGETI, DGETA), mixed federal-state sources (COBAEP, CECyTE) or state sources (General and Digital Upper Secondary Schools). Private providers are fully funded by private sources, yet they cater a significant proportion of upper secondary students (19%) (SEP-Puebla, 2012).
- Most providers offer programmes oriented to prepare students for higher education and the labour market. Vocational education and training is small in enrolment (18%). There are many small providers with a clear-cut vocational orientation and most students attend the CBTIS or CONALEP.¹ Some institutions of higher education provide academically-oriented upper secondary education, such as the BUAP.
- *Bachilleratos Generales* accounts for half (47%) of the upper secondary students, while the rest of providers are very small. A new modality of digital upper secondary, which already accounts for 2% of enrolment, has recently been introduced (see Box 4.3).

Figure 4.1. Half of the students attend the state's *Bachilleratos Generales*

Number of upper secondary education students in Puebla by provider (2010)



Source: Proyecto Educativo SC (2012), *Background report on education in the state of Puebla*, Proyecto Educativo SC, Puebla.

StatLink  <http://dx.doi.org/10.1787/888932830236>

Students are free to choose the upper secondary school and programme of their choice. Upper secondary programmes generally last six semesters (three years). Despite the numerous providers, lower secondary students receive limited information about upper secondary programmes and institutions, which can hamper their transition to upper secondary and can lead to students making the wrong or inadequate choices and therefore increase the likelihood of dropout. Some institutions have highly selective admission policies based on academic performance (e.g., *Preparatorias* BUAP, some *Centros Escolares* and some vocational programmes offered by CBTIS and CONALEP), which suggests that students are sorted into upper secondary institutions by performance.²

The quality of upper secondary education, both regarding educational staff and infrastructure, varies considerably. *Bachilleratos Generales*, state's upper secondary schools, have raised particular concerns. Indeed, during the last few decades the state, in response to the demands of the municipalities, created 373 new schools without conducting a detailed supply-demand analysis, with the result that the schools are incoherently distributed in the territory (Proyecto Educativo, 2012). Today, many of them are poorly resourced and offer very poor learning environments.

Teacher and school leaders quality in upper secondary education suffers from similar problems to basic education: the best candidates are not always recruited and poor labour conditions hamper their professionalisation. In 2011-12, there were 16 370 teachers and 1 511 upper secondary schools in Puebla (INEE, 2012). In contrast to basic education, dedicated initial teacher education structures are non-existent and formal pedagogical-oriented programmes are very limited. For instance a professional career programme for teachers has not yet been designed, this has called into question their pedagogic skills. The case of school principals is also similar to those in basic education and, for example, all school principals in *Bachilleratos Generales* are commissioned and do not receive a formal or financial recognition for their tasks.

Recent initiatives and reforms

To improve co-ordination, the Secretariat of Public Education in Puebla (SEP-Puebla) overhauled the *Consejo Estatal para la Planeación y la Programación de la Educación Media Superior* (State Council for Planning and Programming Upper Secondary Education, CEPPEMS) at the end of 2011. This organisation was established in the 1990s when federal SEP aimed at a better design and organisation of the expansion of upper secondary institutions in each state. In Puebla, it has now turned into a body of analysis, design and implementation of educational policies which encompasses all public upper secondary education institutions (see Box 4.1).

Box 4.1. The Council for Planning and Programming of Upper Secondary Education

The Consejo Estatal para la Planeación y la Programación de la Educación Media Superior (State Council for Planning and Programming of Upper Secondary Education, CEPPEMS) was established to assess school openings of upper secondary decentralised services. In 2011, SEP-Puebla turned it into a body that could facilitate articulation between providers and educational levels and develop common strategies, projects, programmes and policies. The CEPPEMS gathers representatives of all the publicly funded providers and other relevant stakeholders, such as external academic advisors and other members of the SEP-Puebla (basic education, higher education, planning).

The CEPPEMS has selected specific issues of common interest to all members, which have been prioritised by impact on education, feasibility to be implemented during the current administration and interest to all members. As a result, nine working groups have been created: a) supply – demand analysis, b) dropout diagnostic and prevention, c) professional development for teachers, d) implementation of the Reform of Upper Secondary Education, e) student evaluation and academic follow up, f) information systems, particularly of the *Bachilleratos Generales*, g) coordination with basic education to ease the transition, h) online and remote educational aid, i) mechanisms to facilitate transfers between systems.

Source: SEP-Puebla (2012), *Background Report of the State of Puebla*, SEP-Puebla, Puebla.

In 2008, the federation enacted the Reform of Upper Secondary Education (*Reforma Integral de Educación Media Superior*, RIEMS), which was aimed at improving the quality, relevance, equity and coverage of this education level by encouraging individual schools to join the National System of Upper Secondary Education (*Sistema Nacional de Bachillerato*, SNB) (see Box 4.2). The reform sets out common criteria for all providers through four main axes: *i*) a common curriculum based on competencies; *ii*) clearer modalities of upper secondary; *iii*) more professional education services; and *iv*) setting standards for schools to be part of the System. In Puebla, around two-thirds of students and schools already follow the new framework: the curricula of 1 103 federal, state and university upper secondary institutions has already been validated and more than 160 000 students already follow the new common framework. However, only four schools have been certified as fulfilling the requirements to be part of the SNB (SEP, 2012d).

Box 4.2. The federal reform of upper secondary education (RIEMS)

The Reform of Upper Secondary Education (*Reforma Integral de Educación Media Superior*, RIEMS) endeavoured to find common points between different upper secondary education systems without replacing existing operating systems, but ensuring national coherence and an up-to-date curriculum. It sought to change the limited dialogue existing between the federal government, state governments, universities and the whole range of upper secondary schools that operate in the different providers. It also deployed a range of support mechanisms to facilitate the implementation, such as teacher training, increased investment in equipment and schools, training for school principals and a competitive selection procedure, or the introduction of a single national diploma in addition to that provided by educational institutions.

The reform has resulted in a new culture of wider dialogue and the collection of monitoring information for assessment and evaluation. However, it remains to be seen whether it will fully implemented and then lead to a change in classroom practices. The reform and implementation process has underlined the importance of: *i*) adopting a holistic view in order to improve the result on the bottom line (access, retention, relevance) of upper secondary education; *ii*) greater use of pilots would have added to the knowledge base used in the final design of the reform; *iii*) clarity in relation to the resources necessary for implementation, both in terms of budgetary allocations and human resources required; *iv*) more development of know-how by teachers to implement the reform in the classroom; *v*) clear institutional representation for teachers during the reform design in order that their views were more tangibly articulated.

Source: Adapted from OECD (2009a), *Systemic Innovation in the Mexican VET System*, Country Case Study Report, OECD/CERI, OECD Publishing.

In 2011, a constitutional reform stipulated the mandatory character of upper secondary education, with full coverage to be achieved by 2021. However, the reform focuses on providing access rather than completion and quality, it establishes a typical age (15 to 17 years-old) that excludes many youngsters, and it does not specify the federal and state respective financial contributions and mechanisms (INEE, 2011). Moreover, the reform does not consider important aspects to improve equity: *i*) the universalisation of basic education, *ii*) age of students, *iii*) private costs, *iv*) relevant curricula to meet students' interests and needs, *v*) inequities in provision of education services, *vi*) impact on further education and labour opportunities (INEE, 2011).

Main trends and challenges

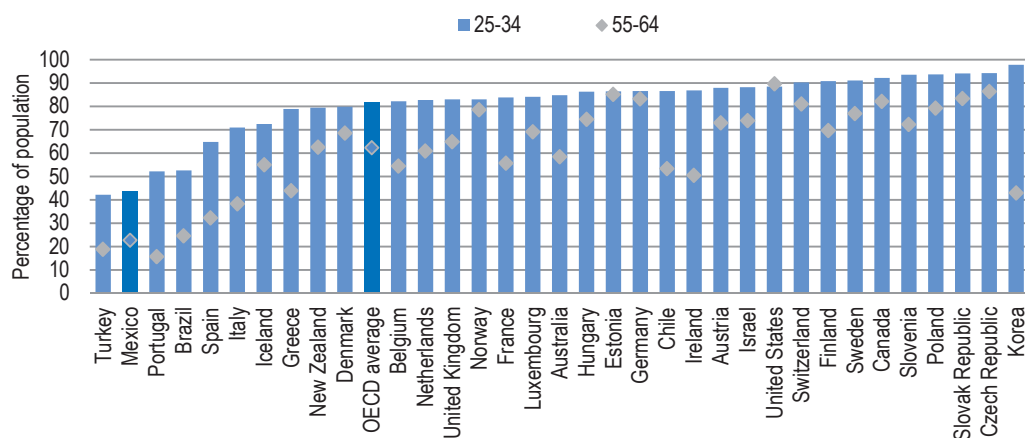
A glance of the main indicators of upper secondary education shows the sheer magnitude of the challenges ahead, despite important progress made in recent years:

An ever-increasing number of students. In the 2011-12 school year Puebla enrolled 246 778 students into upper secondary education representing about 71% of the 15-to-17-year-old population, a proportion slightly higher than the national average of 69% (SEP, 2012a). Although the average ages are 15-to-17, many students are older because of the high incidence of grade repetition throughout the education system. Between 2001 and 2010, the enrolment increased 52%, with most of the growth taking place in state schools (83%) (Proyecto Educativo, 2012). Despite the demographic decline, there are mounting concerns both in Mexico and in the state of Puebla about the capacity of the system to meet the growing demand (see Figure 1.3). While currently all lower secondary graduates are able to enrol into upper secondary education, higher graduation rates will challenge the capacity of the system; not only in terms of the teachers and infrastructure needed but also in the planning and resourcing.

Low upper secondary attainment rates. The state has one of the lowest dropout rates (11%, compared to the national average of 15%) (INEE, 2012) but Mexico and Puebla have low levels of attainment relative to OECD countries. Indeed, albeit trends show remarkable progress in recent years, upper secondary attainment levels in Mexico are among the lowest of OECD countries and in the Latin American region, even lower than in Chile and Brazil. In Mexico, the population that had attained at least an upper secondary education doubled from 23% among 55-to-64-year-olds to 44% among 25-to-34-year-olds (see Figure 4.2). Although this is a significant increase, Chile, Greece, Ireland, Italy, Korea, Portugal and Spain have achieved increases of at least 30% in the last 30 years, and in Mexico the 25-to-34-year-old attainment rate halved the OECD average (82%) in 2010 (OECD, 2012a).

Figure 4.2. Few individuals have attained at least upper secondary education

Percentage of the population that has attained at least upper secondary education by age group (2010)



Note: Non OECD member economies are included for comparison. Data for Brazil refers to 2009.

Source: OECD (2012a), *Education at a Glance 2012: OECD Indicators*, OECD Publishing.

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Slow progress in student learning outcomes. National and international assessments have shown the need to improve the quality of the education system. The Programme for International Student Assessment (PISA), in 2009, indicated that the knowledge and skills of 15-year-olds in reading are very low relative to OECD countries (see Figure 1.2), despite the progress made in the last ten years (INEE, 2010). Moreover, the results of the *Examen Nacional de Logro Académico en Centros Escolares* (National Exam of Academic Achievement in Schools, ENLACE) in 2012 indicated that the majority of upper secondary students have insufficient (32%) or basic (39%) mathematical knowledge and skills, which is similar to the national averages (30% and 39% respectively). In spite of this, the proportion of students who achieve an insufficient level has decreased significantly since 2008 (SEP, 2012b). Moreover, while the proportion of students with an insufficient mathematical score is similar in the two types of VET options (technological and technical-professional) (24%), it is higher (33%) in the academic option.

Strong socio-economic and territorial inequities. Enrolment is strongly linked to students' backgrounds (see Figure 4.4) and the territorial distribution of learning opportunities is uneven. Moreover, the significance of private institutions, the gaps accumulated in basic education and the academic selectivity of quality upper secondary institutions, confine many disadvantaged students to poor educational opportunities. The proportion of students with an insufficient mathematical score in ENLACE 2012 ranged from 63% in municipalities of very high marginalisation to 25% in those of very low marginalisation (SEP, 2012b).³

Priorities and opportunities for the years ahead

Puebla's competitiveness within Mexico and beyond will largely depend on the skills of its population. Expanding high-quality upper secondary education is essential for the state to respond to the challenges of the global economy and to build a more equitable society. Shifting from a low-skilled economy to a knowledge-intensive one also requires significantly improving the quality of the education system and matching the supply of skills to the needs of the region. In a demographic transition, strengthening the skills of youth becomes even more urgent if we consider that that these generations will have to maintain high levels of productivity.

To provide a high quality upper secondary education to all students, the state can consider the following three recommendations:

- *Improve governance mechanisms to ensure that coherent and high-quality upper secondary education is accessible to all:* foster the diagnosis capacity of the state and design a specific strategy for improvement; strengthen the CEPPEMS to increase co-ordination between providers and engage with other key stakeholders; and make further efforts to harmonise upper secondary provision.
- *Raise the quality of upper secondary education,* particularly in Bachilleratos Generales, and increase the relevancy of vocational programmes: ensure integration into the SNB, focus on improving the quality of teachers and school leaders, and make vocational upper secondary programmes more attractive and relevant to young people.
- *Promote access to and ensure completion of upper secondary education,* particularly among disadvantaged students: set pathways to ensure completion of lower secondary education and smooth the transition to upper secondary education; design and implement early detection systems and tailored support strategies for students at risk of

dropping out; create a body of professional counsellors to raise educational expectations and provide career guidance; and, facilitate re-entry into the system.

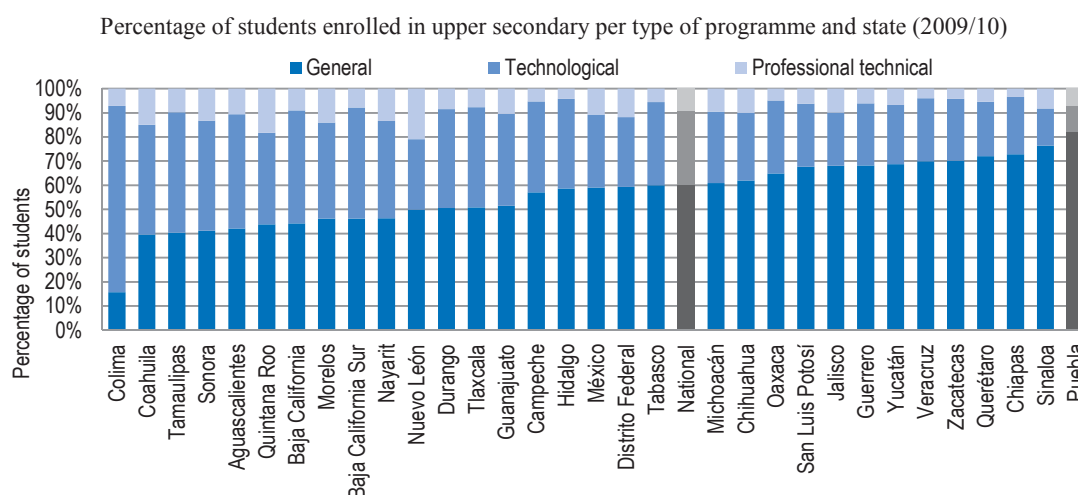
Recommendation 1: Improve governance mechanisms to ensure that a coherent, sufficient and high-quality upper secondary education is accessible to all

The Puebla context

The lack of strong system-wide leadership and vision has resulted in a large number of providers and programmes as well as little harmonisation and coherence of the provision. Upper secondary education in Mexico and the state of Puebla is provided by a set of institutions that operate independently, with limited collaboration and co-ordination. Each provider is responsible for its own institutions, has its own programme orientation, and is funded by and accountable to different actors. The supply of institutions and programmes is not strategically planned and evaluated, which means that these may not respond either to students' demand for education or to the needs of the regions of Puebla.

The scope for improving the efficiency of upper secondary education is considerable and, both Vocational Education and Training (VET) and the provision in rural areas have a great potential for rationalisation and expansion. Scattered VET provision across providers has translated into lack of clarity for stakeholders between programmes of similar content and different names and a likely duplication of efforts (Kis, Hoeckel and Santiago, 2009).⁴ Currently, only a small share of students chooses to enrol into VET (18%), the lowest across Mexican states (INEE, 2012). The state-led expansion of upper secondary enrolment was mainly academically oriented and, although *Bachilleratos Generales* offer fifteen different programmes, most VET-orientated programmes are offered in federal institutions and only account for a small share of the total upper secondary schools.

Figure 4.3. Puebla has the smallest percentage of students enrolled in VET programmes



Source: Instituto Nacional para la Evaluación de la Educación (INEE) (2012), Panorama Educativo de México 2011: Indicadores del Sistema Educativo Nacional: Educación Básica y Media Superior, INEE, Mexico, D.F.

StatLink <http://dx.doi.org/10.1787/888932830274>

Limited co-ordination and lack of planning have resulted in an incoherent distribution of different options in the territory; many students attend schools that are close to their homes without considering the programme orientation or institution. Federal upper secondary schools are mainly located in low and very low social disadvantaged areas, while their presence in areas of high disadvantage is very small (Mancera, 2008). Despite significant efforts made by the state to expand upper secondary education and reach rural areas, where service delivery can be more costly, there are still eight municipalities with only lower secondary services and no upper secondary schools (SEP, 2012c). To bridge the gap, the state has launched an initiative to deliver education through digital means in order to reduce the costs of provision (see Box 4.3).

Box 4.3. The digital upper secondary schools of Puebla

The government of Puebla has made significant investment in *Bachilleratos Digitales* (Digital High Schools) an innovative education model consisting in providing upper secondary education through digital means. *Bachilleratos Digitales* aim to be a cost-effective way of delivering upper secondary education by using the existing physical infrastructure of *Telesecundarias*, a televised provision model of lower secondary education in the afternoons. The implementation of this model began in 2011, with 40 campuses located in 27 remote communities. In 2012, 110 Digital Schools were operating in 78 communities, including 18 in highly disadvantaged areas of the Sierra Negra, and catered to around 4 000 students who would not otherwise have had access to upper secondary education.

The educational model consists of an intensive use of new technologies (i.e. digital whiteboard, laptops, internet), an electronic platform that offers learning materials as well as a management system, and a facilitator. The facilitator teaches all the subjects in the curricula of the RIEMS. As opposed to limited initial teacher training in *Bachilleratos Generales*, facilitators in this system receive a specific training on basic computing skills, introduction to the educational model, fundamentals for new educational management, learning strategies through technologies and use of applications and tools of web 2.0. Moreover, they are continuously supported and trained online.

Source: Adapted from SEP-Puebla (2012), Background Report of the State of Puebla, SEP-Puebla, Puebla.

To foster co-ordination between public providers, the state has transformed the *Consejo Estatal para la Planeación y la Programación de la Educación Media Superior* (State Council for Planning and Programming of Upper Secondary Education, CEPPEMS) into a discussion forum, organised around thematic workshops, in order to address some of the fundamental challenges of governing this complex system (see Box 4.1). Similarly, the federation has made rough estimates of the additional financial resources that expanding access to upper secondary education would require (SEP, 2012c), particularly in terms of infrastructure, but no clear strategy has yet been designed at the national or state level.

The relationship with key stakeholders, including business and universities, is generally weak and usually bilateral as a common forum to articulate the relationships among them has not been created yet. In spite of this, some institutions (e.g., CONALEP, CECyTE and CBTIS) have engaged with representatives of private firms to gather their views regarding the skills and profile of the graduates they need (Proyecto Educativo, 2012). As a result of these consultations, for example, CONALEP has adjusted the set of programmes offered and its relationship with the major automobile producer of the region

has provided them with apprenticeships and equipment donations (SEP-Puebla, 2012). However, despite their potential benefits and with some exceptions, the business sector has played a rather passive role.

The international context

The division of responsibilities among national, regional and local authorities, and upper secondary institutions is subject of debate in many countries. However since the early 1980s a decentralisation trend has been observed in OECD countries, in combination with a greater role of central authorities in setting standards, curricula and assessments (OECD, 2012a). In the governance of upper secondary education, consultation with other stakeholders (*i.e.* business sector, universities) is crucial to better understand tertiary education and labour market needs as well as to enrich the learning opportunities available to students (Zapata, *forthcoming*).

Expanding access to high quality upper secondary education also represents a financial challenge. The size of the school-age population influences both enrolment levels and resources, although expenditure per student has not always kept the pace of enrolments (OECD, 2012a). Bringing access to rural areas, the creation of diverse pathways to offer attractive learning opportunities to all students and measures to support students who may be at risk of dropping out translates into higher costs. For example, more resources tend to be invested in VET programmes than in general programmes (USD PPP 519 more, compared to 1 124 in OECD) (OECD, 2012a). To enhance access at a lower cost, innovative delivery strategies, such as merging education services (*e.g.* academic and vocation institutions) and ICT based learning in rural areas or partnerships with businesses or other stakeholders, have been explored in OECD countries (Zapata, *forthcoming*). In relative terms, in 2009 Mexico had one of the lowest expenditure per upper secondary student (USD PPP 3 534) in OECD countries, almost three times smaller than the OECD average (USD PPP 9 755) (OECD, 2012a), and raising the quality of education is likely to require higher expenditures per student.

Most education systems are confronted with the challenge of improving quality and securing a meaningful learning for all students. Upper secondary education has to give students a good start for entry into the labour market and in university, which means that changes in the demand for skills have to be identified, articulated and translated into relevant curricula and programmes (OECD, 2012c). The goals of upper secondary education are reflected on its structure, which varies across countries in terms of pathways, length and orientation of programmes. In Mexico, 91% of upper secondary students pursue general programmes (compared to 54% in OECD),⁵ and all pathways allow students to enter tertiary education.

Strategies for action

1A. Strengthen the leadership of the state through an improvement strategy based on a solid analysis

The SEP-Puebla should take the lead in the efforts to improve and enhance access to upper secondary education in the state. Without the strong leadership of an authority, which should have a comprehensive and in-depth perspective of the system, guiding all providers, the upper secondary system in Puebla faces difficulties in taking the necessary steps to transform the system and achieve universal coverage. This capacity could be developed by conducting an initial analysis, which should be regularly updated to track

changes over time and evaluate the effectiveness of policy innovations. The analysis should be followed by a strategy to ensure the provision of a coherent, sufficient and high-quality upper secondary education.

A first step that Puebla can consider is conducting a comprehensive and in-depth analysis of the system. It should have a threefold perspective: the demand (*i.e.*, potential enrolment, preferences of students), the supply (*i.e.*, capacity constraints, quality) and the current and future trends and needs of the economy and society. Finally, it should be comprehensive, including not only the institutions administrated by SEP-Puebla but also other providers in order to have a complete vision of the system. While this diagnosis could take into consideration, but should be separated from, related initiatives of the CEPPEMS (*i.e.* supply-demand analysis). The final aim should be that SEP-Puebla conducts its own analysis to build capacity as well as to develop a clear vision on the future of the system without the influence of current providers. The findings should be shared with CEPPEMS to facilitate a common understanding.

A second step should be to design a strategy for a coherent, sufficient and high-quality upper secondary education supply. A particular emphasis should be placed on *Bachilleratos Generales* as they cater for half of the upper secondary student population, they are fully under the state's responsibility and the quality of many of them is of concern (see Recommendation 2); thus, they may require stronger and determined measures for improvement. The strategy should enable the state to:

- *Foster efficiencies in order to meet the financial challenge*: It should map potential mergers, closures and student transfers and assess the (financial, human and political) costs, feasibility and acceptability of different alternatives. Stringent rules should continue to be applied for the opening of new schools that are unlikely to offer a quality provision or in areas of overcapacity. This strategy should also enable the state to identify potential synergies between upper secondary and basic education schools (see Recommendation 3B in Chapter 2).
- *Promote a more even distribution of learning opportunities*: the analysis should enable the state to identify the level and quality of services in each municipality and promote a more even distribution across the territory. Regions that do not have upper secondary services or where students may not be able to afford other institutions could be prioritised. The state could also consider exploring ways to revise the role of municipalities to prevent ad-hoc distribution of services and improve the quality of infrastructure.
- *Spur and scale up innovations*: innovative and more cost-effective types of provision, which could be the case of the Digital Upper Secondary Schools (*Bachilleratos Digitales*) (see Box 4.3), should be evaluated both in terms of quality and cost and, if the results are positive, scaled up. The state should also continue using these innovations to introduce improvements in other areas, such as teacher recruitment.
- *Meet future needs*: forecasting future needs of the economy and society is important, as the education system cannot immediately adjust to changes in demand. The improvement strategy should feed the long-term education and infrastructure plans (see Recommendation 1B in Chapter 5) and should be co-ordinated with other areas of the government (*i.e.*, basic and higher education; economic, employment and demographic services).

The diagnosis and strategy for improvement should place particular attention on ensuring that both the number and specialisation of VET graduates matches the current

and future labour market demand for skills. The state should take the lead in defining what skills should be provided in the short and in the long term (see Box 4.4). Providers may favour already existing programmes to increase the returns to investments made (*i.e.*, workforce, equipment) and may maintain popular programmes even when labour market outcomes are poor (OECD, 2010). Also, the state should explore ways to expand the provision of VET and increase the coherency across programmes.

Box 4.4. Anticipating and addressing skills shortages in VET

To assess the labour market demand for skills, Puebla may want to engage in formal consultations with local stakeholders (*i.e.*, employers and unions) and conduct forecasts of long-term skills needs. Many OECD countries (*e.g.* Australia, Canada, Ireland and Finland) forecast employment trends by occupations within a five- to ten-year perspective (Neugart and Schömann, 2002) and use them to inform policy making, student choices and the public. Building the capacity to anticipate skills needs both regionally and by occupational sector is important to bridge the time lag between creating a programme, the first students enrolled and their entry into the labour market. Moreover, anticipating skills can also help the state to increase coherency of VET programmes across institutions by identifying overlapping as well as shortages (see Recommendation 3C).

A further possibility could be to conduct a graduate destination survey to VET graduates at a fixed moment after completion. This could enable the state to adjust provision and support the most successful programmes and institutions. Across OECD countries, some countries conduct graduate destination surveys (*e.g.*, Flanders (Belgium), Ireland, the Netherlands and Scotland (United Kingdom)). Other countries with an individual register for many purposes (*i.e.*, education, labour market, tax records, social benefits) use this dataset to track individuals along their educational and future careers. Other sources of information about graduates that could be considered to address skills mismatches are surveys, such as the labour force, or census (OECD, 2010).

In Portugal, in 2002, the Institute for Innovation in Training (Inoform) undertook a study with a two-fold approach based on consultations with social partners and forecasting research techniques to anticipate skills, training needs and identify trends in the tourism sector (Beleza and Gaspar, 2005). Consultations facilitated the creation of networks of knowledge that connected key stakeholders (*i.e.* enterprises, industrial associations, trade unions, occupational associations, education and training establishments, technology centres, sector specialists), resources and activities. Labour-market forecasts provided a diagnosis of the sector and identified the future needs, broaden and enrich occupational profiles, facilitate professional mobility and explore inter-sector capacities. The consultations and forecasting resulted in a *Protocol for strategic workforce development planning for the tourism sector*, a strategic plan with objectives to structure training with a three-year and a ten-year strategic vision, and led to seven *Priority action plans* (PAPs).

1B. Strengthen the CEPPEMS' ability to co-ordinate with all providers and promote further engagement of key stakeholders

A close dialogue with other providers is the key for better planning of education services under the current fragmented governance structure. Moreover, the state could explore ways for a greater involvement from universities and the business sector, those stakeholders that would provide education or employ upper secondary graduates in the future, in order to foster efficiencies and increase the returns to education.

The SEP-Puebla should continue playing a leading role in the CEPPEMS and could consider strengthening and making a greater use of this body to co-ordinate with all

providers. The CEPPEMS can be a useful platform to develop a joint understanding of the upper secondary system, identify a common set of goals and find synergies across providers. The state could further transform the CEPPEMS from a discussion forum to a decision-making body. It could facilitate, for example, agreements between providers in oversupplied municipalities or take-overs of low-quality schools. One option to strengthen the CEPPEMS is to increase its representation by integrating all the providers of upper secondary education in the state, including the *Centros Escolares* and a better representation of private institutions; facilitate the participation of other relevant areas of government (economics, health, employment, youth, security); and, even to create venues for the participation of major stakeholders, including the business sector and universities.

The state could consider how to best exploit the strategic position of Puebla in higher education to also strengthen the upper secondary education system. Some institutions of higher education are already involved in the provision of upper secondary education or in teacher preparation, but a greater engagement with other providers could be beneficial. For example, they could provide access to better facilities and specialist knowledge, particularly in areas where upper secondary schools are poorly resourced (see Recommendation 3C in Chapter 5). Moreover, higher education institutions can be useful to raise the educational expectations of students (see Recommendation 3C in this Chapter) and, since many students move on to higher education once they complete upper secondary, the state could explore ways to smooth the transition by engaging with universities to improve guidance systems.

In Australia, Victoria University works with upper secondary institutions in the west of Melbourne to improve young people's access to, and successful participation in, post-compulsory education and training (see Box 4.5).

Box 4.5. Victoria University's Access and Success programme (Australia)

Victoria University provides both tertiary education and technical and further education (TAFE) and the university serves a student population with a higher than average representation of students from low SES backgrounds and non-English speaking backgrounds. The Access and Success programme is a major initiative, which works with schools in the west of Melbourne to improve access to and successful participation in post compulsory education. It has established collaborative teaching and research partnerships with schools and has implemented programmes across more than 70 different sites. It comprises four "arms": i) Learning Enrichment involves learning teams of school and university staff and students working on projects to enrich learning environments, ii) Teacher Leadership aims to engage teachers and principals in professional learning that increases teaching capacity in the schools, iii) Youth Access involves working with senior secondary students to support their aspirations and provide information on pathways to tertiary education and employment, iv) Schools Plus aims at building school-community connections and enhancing students' educational engagement through school-based programmes with community partners. Moreover, the University conducts evaluation and research to develop and disseminate the work undertaken which supports and contributes to the sustainability of the Access and Success programme.

Source : Sellar, S., *et al.* (2010): Early Interventions in School as a means to Improve Tertiary Education Outcomes for Disadvantaged Students: Case Studies of Selected Australian University Outreach Activities. Department of Education, Employment and Workplace Relations, Canberra.

To raise the attractiveness, relevancy and quality of upper secondary programmes, the state should explore ways to involve the business sector in providing equipment, trainers or workplace learning. For example, the business sector can improve the quality of

programmes by offering access to new technologies and trainers that know how to use them. A greater engagement with the business sector could result in more opportunities for workplace learning and facilitate the transition to the labour market (see Recommendation 2C). Also, partnerships with the business sector may facilitate attracting better VET trainers and fostering a mutual understanding and exchange of knowledge between firms and VET schools (OECD, 2010). Achieving this goal also needs a more pro-active role from the business sector.

1C. Make further efforts to harmonise upper secondary education and foster a more efficient administration of the system

The long-term success of upper secondary education will depend upon the existence of a well-functioning governance system, while the current fragmentation is likely to fail in meeting the quantity and quality challenges. The Reform of Upper Secondary Education (RIEMS) is a great start, but it does not directly harmonise provision as it only encourages greater convergence across upper secondary providers. In dialogue with the federation and upper secondary institutions, Puebla should explore ways to implement or put forward further, more prescriptive, reforms for all providers. This should result in the mid-term in fewer providers and a clearer governance structure that will increase coherence, clarity and efficiency across the system.

A first step could be to explore ways to ensure a coherent offer of study programmes and stress the differences between providers. To this end, the state could draw on the skills forecast (see Recommendation 1A) or the *profesiograma* (or alternatively, create a qualification framework) to clearly identify overlapping between qualifications. Then, Puebla could reduce the number of programmes offered by *Bachilleratos Generales* in municipalities where there is already overcapacity for these programmes or high-quality institutions are offering them nearby, encourage consolidation of overlapping programmes and support the specialisation of providers.

A second step could be to reduce the number of providers. One option to decrease the number of providers could consist of exploring opportunities with the federation to transfer and merge federal schools to the state; indeed, the decentralisation has already resulted in transferring all basic schools and part of the upper secondary ones. In decentralised countries, schools are typically managed at the local level. Another option that could be put forward to the federation is to reduce the number of federal providers by, for example, grouping them by orientation (academic or vocational). This could enable them to specialise and increase the quality of the education provision (*e.g.*, a vocational provider could have a more labour market-oriented curriculum with permanent links to and collaboration with industry). Both providers could offer equivalent pathways leading to higher education and lifelong learning opportunities in the same schools so that students can choose either option without moving to another school.

In a long-term perspective, the state could put forward a new education authority covering all providers with delegated executive responsibilities, for example, in the form of a consortium. While this would require political agreement between many different actors, a single management body would equip the state with a strategic vision for upper secondary education. A single management body would strengthen upper secondary education, improve planning, foster a better use of resources, and provide coherence and cohesion to the system and, in this way, mitigate the negative effects of the current fragmentation.

Recommendation 2: Raise the quality of upper secondary education, particularly in *Bachilleratos Generales*, and increase the relevancy of vocational programmes

The Puebla context

Many upper secondary teachers and school leaders work under very challenging conditions. Raising the quality of education would require a profound transformation, particularly in the case of *Bachilleratos Generales*. The incoherent distribution of *Bachilleratos Generales*, which accounts for half of the student population, in the territory has resulted in many *bachilleratos* with low numbers of students enrolled, only two or three teachers to teach all subjects of the three grades and a lack of facilities (library, labs, computers) (Proyecto Educativo, 2012).

Similar to basic education, there is an oversupply of teachers but the best candidates may not be selected as recruitment processes may be ineffective and several actors, including teacher unions, can influence recruitment and progression. In the expansion of upper secondary institutions, led by *Bachilleratos Generales*, recruitment often did not take into account effectively candidates' education or prior experience (Proyecto Educativo, 2012). Moreover, there are teacher shortages in certain subjects (*i.e.*, English, Mathematics) and, since having tertiary education degree is the only academic requirement to become an upper secondary teacher, teachers may lack pedagogic skills (Proyecto Educativo, 2012). In Puebla, 66% of all public upper secondary teachers have participated in the Programme of Teacher Training in Upper Secondary Education (*Programa de Formación Docente de Educación Media Superior*, PROFORDEMS) since 2008 (SEP, 2012d), which provides 200 hours of training to teachers with a workload of more than 15 hours a week.

Poor labour prospects hamper the professionalisation of a teacher workforce, as some of them work in two or more institutions, which can lead to high turnover rates in some institutions (Proyecto Educativo, 2012). The majority of upper secondary teachers (62%) work per hour, while some work half time (18%), three-quarters (10%) or full-time (10%) (INEE, 2012),⁶ although it varies widely by institution (Proyecto Educativo, 2012). In contrast to basic education, a structured career programme for upper secondary teachers has not yet been established, although the creation of a new teacher career structure has recently been proposed by the new federal government (Government of Mexico, 2012).

Principals and other upper secondary leaders are usually selected by the management of each provider, and most institutions have not established a formal competitive selection process yet or clear leadership standards. The RIEMS encourages selection of principals in a competitive basis and, since 2008, all principals in federal schools have been competitively appointed (SEP, 2012d). The posts of principals in federal institutions are formally recognised (SEP, 2012d), but whilst in *Bachilleratos Generales* all principals are commissioned to undertake these duties, they do not receive additional compensation or formal recognition (Proyecto Educativo, 2012). To increase their skills, in Puebla, 152 principals participated in the *Programa de Formación de Directores* (PROFORDIR) in 2009 and 55 in 2012.

Poor planning and inadequate investments in the expansion of upper secondary education have resulted in marked differences in the infrastructure of the providers, with some schools with poor facilities. While privately funded and federal upper secondary schools tend to have better infrastructure (*e.g.*, CBTIS, CBTA, BUAP, CONALEP), many *Bachilleratos Generales* upper secondary schools fail to provide even basic elements like laboratories or libraries (Proyecto Educativo, 2012). Indeed, a number of

municipal governments did not provide adequate infrastructure, and some *bachilleratos* deliver education services in lower secondary schools, local offices or other places with either uncertain long-term access or potentially unsafe conditions (Proyecto Educativo, 2012).

As in other countries, in Mexico, vocational education and training programmes (VET) suffer from low reputation and Puebla is the state with the lowest percentage of vocational upper secondary students (18%). The main difference between the two VET programmes is that the technological (*Bachillerato Tecnológico*) has more general (60%) than vocational education (40%), while the technical-professional (*Bachillerato técnico-professional*) has 35% of general subjects and 65% of vocational ones. Apprenticeships are still rare, with the exception of CONALEP that requires students to complete 360 hours of practical training, although students may engage in community service (*servicio social*) (SEP-Puebla, 2012).

To ensure a minimum quality across providers, the RIEMS set out the National System of Upper Secondary Education (*Sistema Nacional de Bachillerato*, SNB). To become part of the SNB, individual schools need to comply with certain standards for the provision, which encompass academic, managerial, teacher training and infrastructure standards. For example, the PROFORDEMS is the first common training programme and, although attendance is voluntary, it is compulsory in order to join the *Sistema Nacional del Bachillerato*. The Council for the Evaluation of Upper Secondary Education (*Consejo para la Evaluación de la Educación del Tipo Medio Superior*, COPEEMS) grants certification, permanency and removal from the SNB. So far, only four upper secondary schools of the state of Puebla have been qualified as meeting the requirements to be part of the SNB (SEP, 2012d). The state introduced the Quality Assurance Model for the State General Baccalaureate (Macali) in 2011 to facilitate a self-assessment and external evaluation prior to seeking certification for the SNB. In this way, educational institutions get acquainted with an evaluation culture, identify their strengths and areas of opportunity for improvement and increase transparency to the public (SEP-Puebla, 2012).

The international context

Research shows that institutions need to be governed by a clear quality assurance framework that serves both accountability and improvement purposes, and that combines internal and external evaluation (OECD, 2012c). Assessment and evaluation frameworks usually have four dimensions: *i*) student assessment; *ii*) teacher appraisal; *iii*) school evaluation and; *iv*) system evaluation (OECD, 2013). While many countries do not have a comprehensive framework in place yet, most of them have gradually developed different evaluation components (OECD, 2013).

Improving quality in education requires bolstering the buildings blocks of the system: teachers and school leaders. Common challenges across OECD countries to improve the quality of teachers and school leaders are related to initial and continuous professional development, the supply factors (*i.e.* attraction, recruitment and retention), evaluation, and the financial and human and material resources for supporting them. Moreover, the lack of adequate infrastructure can have a detrimental effect on learning (see Chapters 3 and 5).

In all OECD countries, upper secondary teachers hold a tertiary degree. In addition, most OECD countries require that candidates for the teaching profession acquire a licence or supplementary credential, pass a competitive examination, and/or participate in an on-the-job teacher teaching as part of an induction process or probationary period (OECD,

2012a). Initial upper secondary teacher-training programmes range from 3 to 6 years (Zapata, *forthcoming*). To ensure professional development, some countries require teachers at some or all levels of instruction to participate in continuous education. Moreover, most OECD countries have developed an administrative record of teachers that contains a detailed profile of all teachers (*e.g.* their qualification, experience, career path), however such an instrument is lacking in Mexico (OECD, 2012a).

Across OECD countries, upper secondary teachers have better working conditions than those at lower education levels: less teaching hours and higher salaries (OECD, 2012a). As regards those who wish to pursue a career in teaching, some countries have “career-based” systems (*e.g.* France, Japan, Korea and Spain), in which teachers are expected to remain for many years in the career, which may avoid teacher shortages but can raise concerns on incentives to perform. Other countries have “position-based” systems (*e.g.* Canada, Sweden, Switzerland and the United Kingdom) aiming at selecting the best candidate for each position, but may face difficulties to find candidates in certain subjects, ensuring a core of quality older teachers, and filling vacancies in unattractive schools (OECD, 2005a).

A large body of research shows that education leaders play a key role in creating the right conditions for good teaching and learning. In OECD countries, four policy levers have been identified to improve school leadership (Pont, Nusche and Moorman, 2008), which may also apply to upper secondary institutions. First, school leadership responsibilities should encourage them to support, evaluate and develop teacher quality, engage in goal-setting and organisational evaluation, enhance strategic financial and human resource management and, operate more widely than within the confines of the school itself. These responsibilities need to be distributed with other middle management and school professionals, and with school boards. Also, school leaders need to be prepared for leadership through induction programmes, and adequate in-service opportunities adapted to need and context. Finally, highly professionalised recruitment procedures and salaries commensurate with their position are essential to attract the best leaders.

The trend towards a vocationalisation of education to increase employability is combined with a more comprehensive organisation of studies to prepare students for lifelong learning (Lauglo and McLean, 2005). While VET programmes may be considered an inferior option in some countries, in other countries these lead to higher youth employment. A high-quality technical and vocational education has to be directly connected with the labour market and the continuous changes in the use of technologies, organisation of work or demand for skills (OECD, 2010). Teachers and trainers need relevant work experience in industry in order to be familiar with the skills and working methods needed in their occupation, in addition to have the pedagogical skills to teach effectively. Also, countries with strong and attractive VET systems tend to have well-established apprenticeship systems (*i.e.*, Austria, Germany, Switzerland). In contrast, Mexican firms invest little in vocational training and the connection between the vocational and training system and employers is relatively weak (Kis, Hoeckel and Santiago, 2009).

Strategies for action

2A. Ensure integration into the SNB, particularly in the case of *Bachilleratos Generales*

To increase the quality provided in upper secondary and in particular in *Bachilleratos Generales*, Puebla can consider the SNB as a minimum standard in all institutions and intensify efforts to achieve this level. While meeting the national standards is not mandatory, it will lead to higher harmonisation and quality. In a second stage, upper secondary institutions should not only aim at meeting the national standards but also to provide higher quality.

The state should reinforce and continue the Macali programme and use feedback loops from the current obstacles that institutions are facing to devise strategies to bring all schools up to par. However, improvements should be based on a solid diagnosis (see Recommendation 1A) to foster a more efficient and equitable distribution of learning opportunities. To increase transparency, engage institutions in meeting the standards and recognise the progress in improving the quality of educational services, the state could consider publishing the names of schools that do not meet the criteria alongside other relevant information about its learning conditions (*i.e.* resources, performance).

An important step further could be to use the standards of the SNB as a threshold to optimise the capacity of the state and ensure quality provision. Upper secondary schools that fail to meet the criteria may require substantial support and, wherever possible, the state should apply a stringent policy as low quality institutions can have a zero or negative effect on educational outcomes and, thus increase inefficiencies in spending. Since many *Bachilleratos Generales* are in a poor condition and they are solely under state control, specific actions are required to improve their quality, including closing or merging them where students can be transferred to nearby institutions (see Recommendation 1A). Moreover, the state should explore innovative ways to deliver education, such as Digital Upper Secondary (see Box 4.3), which may be more effective when learning environments are very poor.

Since national standards could be considered a minimum, the state should progressively raise the bar and put into place measures to ensure that greater access is not at the expense of quality. One way of raising the quality is to set more demanding criteria than those stipulated in the SNB. For example, the state could progressively increase the percentage of teachers that should have attended the PROFORDEMS or a similar programme to ensure that teachers are equipped at least with basic pedagogic skills.

Another way to promote higher quality could be to limit enrolment or introduce incentives, such as quality signals and financial rewards, as in other OECD countries (OECD, 2010). In Denmark, the state limits the number of students admitted to VET programmes in which students cannot find an apprenticeship place or with poor labour market outcomes (Danish Ministry of Education, 2005). In Finland, funding to VET institutions is linked to indicators of performance, such as the employability of students, dropout rates and staff performance. In France, vocational schools that excel in different areas (*e.g.*, local and regional partnerships, career guidance to students, varied and coherent training opportunities) are entitled to the distinctive label *lycée des métiers* that signals quality to students and employers. In the Netherlands, VET institutions can compete for an annual prize on innovative models in vocational education.

2B. Focus on improving the quality of teachers and school leaders, particularly in Bachilleratos Generales

Poorly trained and supported teachers and upper secondary leaders translate into lower quality opportunities for students to learn and develop their potential. The state should aim at attracting, recruiting and retaining high quality teachers and leaders to bolster the main pillars of the education system. In addition, VET teachers need specific pedagogical training and exposure to industry to update their knowledge of technologies and workplace practices.

In the recruitment of new teachers, the state can establish measures to encourage providers to select the best candidates and ensure that recruitment processes are transparent and effectively match the needs of institutions. The state should take advantage of the excess of supply to select the best candidates through competitive procedures and ensure that teachers' preparation matches the needs of schools, as some subjects in upper secondary education can be too advanced for teachers from other subject areas. Also, the state could consider introducing incentives to address teacher shortages in certain subjects, such as English or Mathematics.

To guarantee that teachers are equipped at least with basic pedagogical skills, the state could consider defining more precisely teachers' and trainers' qualifications and creating mechanisms to ensure that all new recruitments meet them and existing staff have access to professional development activities. For example, the state should continue encouraging take-up of the PROFORDEMS. In addition, the state should offer articulated induction and continuous training development options. If Puebla decides to create a special unit to co-ordinate teacher continuous professional development (see Recommendation 3A and 3B in Chapter 3), this could also contribute to the development of a coherent professional development strategy for VET teachers.

The state could also consider introducing a career structure to evaluate and reward teachers, which would facilitate attracting and retaining better candidates, in line with the career programme for upper secondary teachers that the federation has recently proposed. The rationale is clear: investing in professionalisation is neither profitable for individual teachers nor for the state under the current poor job prospects.⁷ Teachers should be subject of an evaluation, which could allow to identify their needs and further develop their potential through professional development activities and to reward their accomplishments.

In addition, the state should guarantee that teachers in VET programmes have sound pedagogical and professional skills. The state could design a specific take-up training to acquaint teachers of general subjects to the particularities of vocational education and training. For example, Switzerland has set up a specific institution for vocational teacher training, and these teachers receive 300 hours in addition to their training by an institution specialised in VET institutions (OECD, 2010). In the case of teachers of practical skills (trainers), the state should encourage exposure to industry to update their knowledge of technologies and practices. To ensure skills remain up-to-date, the state could facilitate sabbaticals or professional leave, particularly in sectors with rapid technological change, such as the Telkkä programme in Finland which included a two-month on-the-job period.⁸ In Mexico, it is common that teachers only have part-time positions, but their additional jobs may not always be in industries relevant to their teaching specialisation.

Since upper secondary leaders play a vital role, Puebla should aim at improving their selection, training and recognition. An important step ahead could be to ensure that

principals are recruited on the basis of a competitive procedure, as it has been the case in federal institutions since 2008 (SEP, 2012d). Improving the appointment and recognition of principals is particularly important in the case of *Bachilleratos Generales* as most of them have been commissioned to undertake the job. If a *Normal* is transformed into a specialised training institution for school leaders (see Recommendation 4B in Chapter 3), it could also cater for leaders in upper secondary institutions. Moreover, all professional development opportunities could be coordinated by SEP-Puebla (see Recommendation 2A, 2D and 3A in Chapter 3).

2C. Make vocational upper secondary programmes more relevant to young people and the labour market, create excellence centres and promote apprenticeships

Vocational education and training programmes should be more relevant to young people and the labour market, providing students with the right mix of skills to find an occupation and engage in lifelong learning. Greater engagement with stakeholders, both to create excellence centres in strategic sectors and to maximise the value of workplace learning, could raise education outcomes.

The state should aim at improving the attractiveness and relevancy of VET programmes. Although the state should ensure that the supply of graduates matches labour market needs (see Recommendation 1A), vocational education should also provide students with the right mix of general academic skills and vocational ones in order not only to equip them with readily employable skills to be but also to prepare them for the rest of their lives. Numeracy, literacy and other general academic skills, as well as other wider so-called ‘soft’ skills, provide the foundation for lifelong learning, which is particularly important, as labour markets change rapidly and often unpredictably.⁹ Moreover, many students in upper secondary vocational programmes may pursue further education before entering the labour market, which requires keeping up with academic skills.

To raise the quality of VET, the state should increase the quality of teachers (see Recommendation 1B) but could also explore ways to foster excellence and take full advantage of greater stakeholder involvement. One option could be to create centres of VET excellence to develop a highly competitive workforce in strategic economic sectors that can improve the international competitiveness of the region. To this end, the state should identify strategic sectors (*e.g.*, automobile industry, agriculture, tourism) and forge alliances with VET institutions, universities and employers. In return for supplying skilful graduates, VET excellence centres should benefit from access to cutting-edge technologies and specialised knowledge. While traditionally these alliances were confined to universities, an increasing number of VET schools are participating in such clusters.

Another option is to provide more opportunities for higher quality workplace learning. Workplaces can provide a high-quality learning environment, particularly when upper secondary learning environments are of low quality, although these do not replace classroom learning. While CONALEP has already undertaken steps to introduce apprenticeships, the state could facilitate and encourage apprenticeships in other providers offering vocational programmes. Apprenticeships can provide students with hard skills from trained personnel and by using state-of-the-art equipment and soft skills by being in a real-world environment and that facilitate the transition from school to work.

To promote apprenticeships, the state could establish measures to ensure quality workplace learning (Box 4.6) and explore ways to remove the existing legal obstacles and increase the involvement of the business sector. As already recommended in the OECD Review of VET in Mexico (Kis, Hoeckel and Santiago, 2009), the creation of a contract for trainees removes the need for individual employers to make their own arrangements, to cover trainees against unforeseen risks and, by setting out the rights and obligations of both parties, to control the quality of workplace training. If there is not enough supply of apprenticeships, the state could consider offering employers financial incentives (e.g., subsidies and tax incentives) that can be targeted to certain groups (e.g., SMEs or groups of workers), types of training or economic sectors.

Box 4.6. How to design quality apprenticeships?

Apprenticeships combine education and training in vocational institutions with workplace training, ranging from apprentices attending school one or two days a week (e.g., Austria, Belgium-Flanders, Germany, Switzerland), to a sequence of segments, each some months long on and off the job (Ireland), to the Norwegian arrangement with two years of school followed by two years of workplace training (OECD, 2010). Apprenticeships are offered in traditional trades as well as, increasingly, in technical areas, such as laboratory and hospital technicians. Since the quality of workplaces can be very variable, the design of apprenticeship schemes should make careful consideration of:

- 1) *Matching students to employers* as workplace learning can be part of career guidance: workplaces can inform choices about future education and training as students learn about the day-to-day reality of an occupation (e.g., type of tasks involved, working conditions) and about potential employers.
- 2) *Clearly defining the roles and responsibilities of apprentices, employers and VET providers* to ensure a common understanding of the training to be provided and should encourage a variety of tasks of increasing complexity to enhance the skills of apprentices.
- 3) *Aligning the interests of firms* so that they provide the best possible set of skills that students seek (Smits, 2007).
- 4) *Setting minimum training requirements for workplace supervisors* to ensure that they are well-equipped with instructional, formative assessment and conflict management skills as well as basic knowledge of the VET system to help apprentices acquire practical skills and better understand the workplace.
- 5) *Establishing quality standards* to ensure that training meets minimum standards in all workplaces and foster the acquisition of skills (i.e., avoiding unskilled tasks or too many firm-specific skills). For example, in Germany, Denmark and Switzerland, there are strong quality controls, and permission for training is withdrawn from companies that provide sub-standard training (OECD, 2010). In addition, Switzerland has designed a *QualiCarte*, a tool to support employers in improving their training.

Source : Adapted from OECD (2010), *Learning for Jobs*, OECD Reviews of Vocational Education and Training, OECD Publishing.

A further option that the state could consider is to recognise the value of informal learning in part-time jobs. Since a considerable proportion of students combine their studies with a part-time job, the state could explore mechanisms to leverage their work experiences. For example, guidance programmes could help students develop their understanding of the workplace and work relationships.

Recommendation 3: Promote access to and ensure completion of upper secondary education, particularly focusing on disadvantaged students

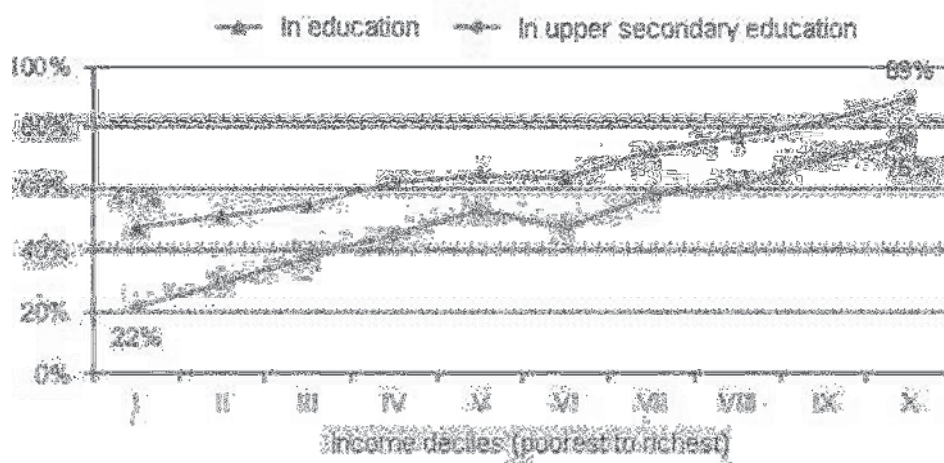
The Puebla context

Persistent student failure in basic education and dropout among those enrolled into upper secondary school result in low upper secondary attainment rates. While the transition between lower and upper secondary education seems to be smooth,¹⁰ wrong choices, difficulties in making progress and high financial costs hinder completion. The results of a recent national survey suggest that school failure is ingrained in the education system rather than in individuals. The federal government has recently made important steps to tackle school failure, such as the introduction of measures to monitor and support students at risk or the creation of a common curricula and scholarship programmes.

Students from disadvantaged backgrounds are significantly less likely to enter and complete upper secondary education. In Mexico, 22% of the most disadvantaged 15-to-17 years-old students are enrolled in upper secondary compared to 76% of the richest (see Figure 4.4) (Proyecto Educativo, 2012). Yet, upper secondary education can dramatically change the prospects of individuals from disadvantaged backgrounds: attainment of this education level is associated with higher wages, more stable contracts and less incidence of informal economy; thus, research indicates that completion of upper secondary is key to escaping poverty (CEPAL, 2010).

Figure 4.4. Low income youngsters are less likely to attend upper secondary education

Percentage of 15-17 year-olds enrolled in upper secondary education per level of income



Source: Proyecto Educativo SC (2012), *Background report on education in the state of Puebla*, Proyecto Educativo SC, Puebla.

After finishing lower secondary education students have to make an important decision for their future academic and professional lives, but receive limited guidance on which to base their choices among a large number of institutions and programmes. At upper secondary education level, guidance and mentoring support vary considerably across providers, but most participate in student fairs and visit different lower secondary schools or offer tutorials (Proyecto Educativo, 2012). However, the outreach of guidance

support and the lack of professional counsellors mean that students may receive no or poor quality career guidance.

Despite completing basic education, many students enter upper secondary education without a solid knowledge and skills on which to build upon and struggle to make progress. Grade repetition rates remain very high, although Puebla has the lowest rates nationwide and remarkable progress has been made in recent years. While only 79% are allowed to move to the following grade at the end of the school year, catching-up exams increase the pass-on rate to 91% (INEE, 2012). However, only 72% of students managed to complete this level on time in 2010-11 (SEP, 2012a). This means that students are older than what they should be: 8% of students were at least two years above the typical age and 20% one year, while 9% were advanced and only 62% were at the typical age of 15-17 years-old in 2010-11 (INEE, 2012).

To close learning gaps and prevent dropouts, some institutions have developed strategies to detect and support students who are falling behind or are at risk of dropping out. For example, some federal sub-systems are starting to implement an early warning system (*Sistema de Información y Alerta Temprana*, SIAT) as part of the national reforms.¹¹ Identification of difficulties is followed by different types of support, mostly by psychologists (CECyTE) or teachers performing tutoring roles (COBAEP, CONALEP). However, the *Bachilleratos Generales*, which accounts for the majority of the student population, still has not developed a timely system of detection for those students at risk. Indeed, the delay of these schools is such that they are the only subsystem without a formal school control system, although measures have been put forward in the CEPPEMS to address this issue (Proyecto Educativo, 2012).

Most institutions continue to apply stringent rules on stay and progression: retention is typically conditioned to a maximum number of subjects failed in one semester or the time to complete a programme is limited. A large percentage of students who are expelled abandon their studies (SEP and COPEEMS, 2012) because switching from one sub-system to another is difficult as students have to start from scratch (Proyecto Educativo, 2012). To remove these obstacles, the federal-SEP stipulated a common curriculum that aims at increasing permeability between institutions and at developing a universal understanding about the competencies that students should acquire in upper secondary education (*i.e.* generic, disciplinary and professional).

In Mexico, the opportunity costs of staying in the education system are high with economic need being the most important reason for dropping out (SEP and COPEEMS, 2012). About one-third of students who drop out combine work with studies at upper secondary level (SEP and COPEEMS, 2012) and, although upper secondary is free-of-charge, voluntary contributions are widespread. The federal government has recently launched the programme *Síguele* (Keep Going), which includes scholarships but also additional support measures to prevent dropouts (tutoring programmes, career guidance, early alert system, reading programme, psychological support). The scholarships are awarded on a need-basis criterion and additional criteria (academic year, gender and performance)¹² and target those who are not beneficiaries of *Oportunidades*, a cash transfer for low income students. In 2012, Puebla created its own scholarship programme PROAPEMS (Support Programme for Educational Permanence in the Upper Secondary Education) to provide financial assistance to those attending state institutions (*Bachilleratos Generales*, *Bachillerato Digital* and *Centros Escolares*) who are not beneficiaries of other scholarships (SEP-Puebla, 2012). Moreover, the BUAP also

exempts beneficiaries of *Oportunidades* from tuition fees and provides scholarships to indigenous students in order to reduce the financial burden (SEP-Puebla, 2012).

Difficulties in progressing combined with high opportunity costs result in many students leaving education. In 2009-10, Puebla was the third state with the lowest dropout rates (11%, compared to 15% nationwide) (INEE, 2012), a remarkable decrease from 16% in 1997-98 (SEP, 2012a). In Mexico the majority of students (61%) drop out in the first year of upper secondary education, 26% in the second year and 13% in the third or following ones (SEP and COPEEMS, 2012). Moreover, most of them (57%) drop out during the school year and 43% in transitions between school years (SEP and COPEEMS, 2012). At the national level, in 2010-11 dropouts were higher in VET options (23% *Profesional técnico* and 16% *Bachillerato tecnológico*) than in academic ones (13%) (INEE, 2011). None of the institutions in Puebla follow up students who leave the education system and re-entering the system is generally not allowed after two years or when students are over 18 years-old (SEP-Puebla, 2012). Older individuals are generally confined to distance learning options as most institutions lack alternatives adapted to the needs of potential re-entering students (Proyecto Educativo, 2012).

A recent national survey, the *Encuesta Nacional de Deserción de la Educación Media Superior* (National Dropout Survey of Upper Secondary Education, ENADEMS) (2012), revealed that the reasons for dropping out were mostly economic (35%) in combination of either school or personal problems (SEP and COPEEMS, 2012). Indeed, the survey also found that half of those who had dropped out (58%) wanted to continue studying when they abandoned, the vast majority (70%) regrets their decision and most of them (67%) would be keen to return to the classroom. In addition, the survey showed that schools did little to retain students as 78% of individuals who had dropped out indicated that neither the school principal nor any teacher tried to bring them back to education. However, there are obstacles to return to education, such as lack of recognition of prior learning (22% of individuals), certain elements could facilitate their return such as financial incentives, flexible study options or shorter courses.¹³ Puebla plans to carry out a specific follow up research to analyse the causes of dropout.

The international context

Upper secondary education is increasingly considered a fundamental step and OECD countries aim at ensuring that all students do not leave the education system before at least attaining this level (OECD, 2009b) as individuals who drop out without minimum skills are likely to remain unskilled for the rest of their lives. Attainment of at least upper secondary is associated to better labour market prospects (*i.e.*, formal employment, salaries, stability, career progress), healthier lifestyles and participation in democratic institutions (Lyche, 2010). Preventing early school leaving is costly but pays-off not only for individuals but also for governments through higher tax revenues, less public spending on health, lesser public assistance and criminal justice (OECD, 2012b).

In Mexico, only 54% of students complete upper secondary education on time, compared to 70% in OECD countries (OECD, 2012a). While in some OECD countries delay in completion is explained by temporary breaks, in others it is related to grade repetition or changing programmes.¹⁴ Preventive measures to reduce dropout should start as early as possible (Lyche, 2010) by identifying students at risk of dropping out and elaborating targeted and effective preventive measures. Reliable data should be collected both on the extent of the problem and on the most common risk factors linked to non-

completion. This data should be transferred between school levels to guarantee early preventive measures and selective interventions (Lyche, 2010).

An increasing number of OECD countries have raised the compulsory schooling age;¹⁵ yet students are free to enrol into upper secondary in countries that display the highest attainment rates. To ensure completion, OECD countries have developed a range of approaches (OECD, 2012b): *i*) more relevant and equivalent programmes, both academic and vocational; *ii*) allowing students to change programmes and removing dead ends; *iii*) providing high-quality career guidance to help students navigate through different pathways and raise their expectations; *iv*) smoothing and supporting students in the transitions, particularly for disadvantaged students and those with low expectations for their futures; *v*) measures to early detect and support students who are falling behind; *vi*) targeted measures for students at risk of dropping out, including diversified pathways and incentives to stay. Moreover, supporting students at risk as well as channelling back those who have already dropped out requires a close cooperation between educational authorities and many other parts of government (*e.g.*, social, health and employment services, justice system) (Lyche, 2010).

The opportunity costs of staying in education increase as labour market opportunities open up. Research indicates that part-time employment can lead to dropout as it may negatively affect student performance and decrease student interest in education (OECD and ILO, 2011). Second chances can provide learning opportunities to those who have not experienced supportive learning environments earlier in their lives (OECD, 2012d). Re-engagement at a young age is likely to lead to completion, while older students have a lower probability of obtaining upper secondary education (OECD, 2010a).

Strategies for action

3A. Set pathways to ensure completion of lower secondary education and smooth the transition to upper secondary education

To raise enrolment into upper secondary education, the state should explore ways to reduce the large number of dropouts in lower secondary education, which represents a bottleneck in the system as non-completion excludes students from further education opportunities. The extent of the phenomenon illustrates the limits of enhancing access at the expense of quality. While currently few students exit the education system in the move from lower secondary to upper secondary education, an increasing number graduates is likely to put more stress in the transition and the state could consider mechanisms to smooth it.

A first step could be to implement measures to raise the quality and ensure completion of lower secondary education (see Chapter 2, 3 and 5). In addition, the state could consider more flexible pathways to increase engagement, such as alternative routes to complete an equivalent qualification. For example, within a comprehensive setting, in Spain students who face difficulties in completing lower secondary education can enter a specific programme leading to the same qualification and enabling them to enter upper secondary programmes, but with a more hands-on content to increase student engagement (OECD, 2012b).¹⁶

A second step could be to explore mechanisms to smooth the transition and raise the relevancy of the programmes offered to increase the returns and attraction for both students and future employers. Some options to smooth the transition and facilitate a

stronger start in upper secondary education, which could also reduce the high dropout rates observed in the first year, include:

- *Ensuring that selectivity and fees do not deter students:* Enhancing the access to upper secondary education also requires decreasing the barriers to enter, which mainly refer to the fees and selectivity in the admission process applied by some providers, which tend to be associated to higher quality. Mechanisms to ensure transparency in the selection procedures as well as targeted measures for disadvantaged students, such as tuition exemptions and scholarships, could be explored.
- *Delivering attractive and relevant programmes:* Students will be encouraged to stay in education if they find learning meaningful for their future. In addition, more flexible pathways and options to combine work and study can be created to facilitate that students stay in education.
- *Helping students to make better informed choices:* On completion of lower secondary education, students are confronted to an important choice between a large number of upper secondary institutions and programmes, and the state could facilitate access to high quality information on the full range of options available to them (see Recommendation 3C).
- *Following up and supporting students in transitions in the Centros Escolares:* In *Centros Escolares*, where students may attend pre-school through upper secondary education in the same campus, the state could promote tracking and supporting students in the transitions to detect and address both learning difficulties and talents as early as possible and make the transition from one level to another more automatic. Moreover, the state should evaluate the *Centros Escolares* and in light of the results strengthen current efforts to improve and expand them. Following the example of *Centros Escolares*, other school clusters that provide upper secondary education should also support students in transitions (see Recommendation 3B in Chapter 2).

3B. Design and implement early detection systems and tailored support strategies for students at risk of dropping out

Raising the compulsory schooling age is not likely to increase attainment in the absence of strategies to support students at risk of dropping out. To this end, the state should encourage providers to implement mechanisms to detect as early as possible students who are falling behind and provide them with tailored support. Moreover, the efforts of the CEPPEMS to look into retention and completion and measures to support students should be strengthened.

Identify early at-risk students

At the entrance of upper secondary education, the state should encourage providers to detect and address serious gaps in the skills, attitudes and knowledge that hinder further progress. Despite the limitations of the ENLACE assessment (see Recommendations 1 and 2 in Chapter 2) and other entrance exams to some upper secondary institutions, the state should continue the current efforts to explore how these instruments could be used as proxies to identify students that may need additional support.

The state should ensure that all providers have early warning systems to identify students at risk and support them as early as possible. Timeliness matters not only because later interventions are less cost-effective but also because dropout rates are

particularly high in the first year (INEE, 2011). While the federation has started implementing the Early Warning System (*Sistema de Alerta Temprana*, SIAT) in federal upper secondary schools, the state should encourage all providers to put similar mechanisms in place. While monitoring data systems can inform policies, they are also a very useful tool in schools and staff should be aware on how to use them effectively to support students (see recommendation 2A in Chapter 2). To increase its potential in following up students throughout their education careers, Puebla could consider ways to integrate the different monitoring systems, both across upper secondary institutions and education levels.

Provide tailored support

The state should use the results of the research on the reasons for dropping out at upper secondary education to inform strategies to ensure that students stay and complete this level. Research has shown that successful strategies are a combination of measures to improve academic performance as well as to address out-of-school problems that may be hindering their participation in schools. Some practices across OECD countries include the following:

- *More and better learning opportunities.* Since the learning styles, capacities and paces of students are different, the state could encourage using a wider variety of learning techniques to respond to students' needs more effectively. Learning time can be extended by introducing remedial classes before or after school, such as Saturday school or Summer School. In addition, teachers should be equipped with skills to deal with students of different abilities, particularly since class sizes are large (see Recommendations 1A, 1B and 1C in Chapter 2).
- *Change policies and practices that hamper progression.* Since grade repetition is costly and can fuel dropouts¹⁷, the state could instigate a debate to set out less stringent rules and put into place measures to reduce grade repetition.¹⁸ While special exams after the end of the school year allow half of those required to repeat to move on to the following grade, the state could reinforce support strategies to address the learning gaps during the school year and offer more opportunities to catch up before the summer. Also, they could reduce teacher support by raising awareness about the costs and negative impact on students, setting specific targets and aligning incentives and accountability to decrease grade retention rates (OECD, 2012b).
- *Effective permeability between programmes and institutions and more flexibility to engage students.* The state should continue exploring ways to decrease the costs of wrong choices by putting forward less stringent rules on switches between institutions. Moreover, the state should monitor that there are no hurdles in practice to the recognition of prior learning and mobility across institutions that have adopted the new common curricula framework and encourage their adoption by those institutions that have not done so yet. The state could also consider diversifying the sorts of programmes and qualifications provided to retain students.¹⁹
- *A holistic approach to underperformance.* Weak progress may be rooted in wider problems, requiring the involvement of specialists, a multi-disciplinary team or co-ordination with social services. In the Netherlands, for example, municipalities have a very active role in fostering partnerships between schools and other related sectors (e.g., sports, culture, social welfare and employment) (Akkermann *et al*, 2011).

- *Financial incentives to stay in education.* Since economic difficulties are the main reason for dropping out, the state could further expand financial support and raise awareness of the benefits of attaining this education level. For example, the state could increase the eligibility to the PROAPEMS and encourage providers to establish tuition waivers for targeted groups. Since the provision of financial measures is very resource-intensive, the state could conduct an evaluation to assess their effectiveness *vis-a-vis* other alternatives, better identify the targeted students and improve their design to raise education outcomes (Slavin, 2010).

3C. Create a body of professional counsellors to raise educational expectations and provide career guidance, particularly in the transitions of the education system and targeted at disadvantaged and at-risk students

Raising educational expectations and helping students to make informed decisions about their future, both in education and in the labour market, are key to leverage Puebla's educational outcomes. The state could consider creating a body of professional counsellors to make high quality guidance available to all students, and in particular to disadvantaged and at-risk ones. This body could also collaborate with lower secondary institutions in order to help students choose their upper secondary programme and institution.

To provide high quality guidance and avoid narrowing the future opportunities of students, the state could consider the creation of a body of professional counsellors. While most of the providers offer some sort of guidance, the roles and education of counsellors vary, and in the absence of professional counsellors, guidance to students may be too narrow or biased towards academic and/or low quality choices. The state could define the roles, set out the requirements to be a counsellor, ensure an adequate preparation and create specific positions in upper secondary institutions. Counsellors should be able to draw out from students what their interests, aptitudes and objectives are and provide advice on the types of job, career prospects, and learning opportunities available (OECD, 2004). Moreover, they could also raise the expectations of students (as well as teachers and parents) and identify and guide talented students towards more challenging areas.

In lower secondary education, the state should ensure that prospective upper secondary students receive comprehensive information about career options and institutions, in addition to the information that students may receive from each provider. For example, one option could be to offer professional counsellors to students for impartial advice at student fairs and encourage all institutions to be present in these fairs. Another option could consist of further developing and disseminating the existing web-based guidance tool, particularly aiming at making information available to students who may not have access to it, who are often those with the lowest expectations. Also, the state could consider offering short workplaces opportunities to students.

In upper secondary education, the state could encourage all providers to introduce effective guidance mechanisms in schools. The reform of upper secondary education (RIEMS) introduced student guidance into the curriculum, although some providers were already offering it. The state could identify what works among the current variety of guidance mechanisms offered and help providers to implement the RIEMS and design their comprehensive career guidance framework. One-to-one services may be necessary

on the eve of important choices. Where guidance is integrated into teaching activities, systems should be in place to ensure it is given sufficient attention (OECD, 2004).

Taking account of limited resources, the state should prioritise support from professional counsellors to disadvantaged and at-risk students as it is likely to have greater effects on them. Effective guidance can open up new horizons, while in its absence choices may be confined to familiar experiences (OECD, 2004). Also, career guidance could help students at risk of dropping out to find meaningful reasons for staying in school (OECD, 2004). In addition, the state could consider expanding mentoring and coaching services in order to build student confidence and encourage students not only to stay in education but also to aim higher. Considering the size and recognition of the higher education sector in Puebla, one option that the state could consider is to involve tertiary education institutions in activities to raise the expectations of disadvantaged students. For example, in Australia, university staff and students of Victoria University participate in activities to raise the education expectations of low income and minority students (see Box 4.6).

3D. Follow up on students who have dropped out and facilitate re-entry into the system

Since the majority of students who have dropped out would like to re-enter the education system (SEP and COPEEMS, 2012), Puebla should establish mechanisms to channel them back. In order to achieve this, following up on students who have left the education system without attaining upper secondary education and creating more flexible options to facilitate their re-entry into the education system is essential.²⁰

A first step would be to design mechanisms which identify individuals who have dropped out. The state could align the incentives of upper secondary institutions to report students who have dropped out as they may be reluctant to report when funding is linked to the number of students enrolled. Other actors, notably municipalities' outreach services, can also have a role in identifying individuals who have dropped out and encouraging their re-insertion. For example, in Denmark, municipalities are obliged to contact individuals who have dropped out at least twice a year until they are 19 years-old and some municipalities extend support even beyond this age (OECD, 2004). In the Netherlands, where individuals up to age 18 must attend school if they have not attained a basic qualification, there are agreements between the ministry, regions and municipalities to apply a tough policy on truancy and absenteeism (OECD, 2012b). For those over 18 years-old, the state offers flexible options, such as programmes that combine work and study.

A second step could be to ensure that there are no hurdles and to facilitate their return to the education system. While the RIEMS provides a common curricula framework, ensuring that equivalence is made in practice is key to prevent discouraging students who have been left to return to education because they have to start their studies from scratch, which also represents a waste of public resources. The state could consider the creation of more flexible and diverse pathways to re-engage them in schooling, such as distance or online learning and part-time or nocturne courses. As economic need plays such a significant role in dropouts, the state could consider creating work-study vocational programmes to better prepare them for lifelong learning while providing them with occupational skills. Also, employers could play an active role in collaborating with the state to help students who have dropped out complete at least upper secondary education.

A third step could be to raise the bar and make upper secondary education accessible to a larger population, including adults. The state could apply a more flexible interpretation of the age limits to cater to the significant proportion of older students by, for example, giving priority to young people without excluding older ones when increasing student numbers would require regulating access.²¹ Also, the state should consider expanding second-chance programmes and adult learning, shifting from an initial education perspective to a lifelong learning in order to raise the productivity of the current workforce. Results of current and future initiatives should be systematically evaluated.

Notes

1. The technological (*Bachillerato Tecnológico*) vocational option is mainly offered by CBTIS (6% of total upper secondary students), while the technical-professional (*Bachillerato técnico-profesional*) is mainly offered by CONALEP (3% of total upper secondary students).
2. For example BUAP requires a minimum average of seven out of ten for students or residents of Puebla state and eight for others, passing the entrance exam with a minimum of 550 points and still admission depends on the places available (SEP-Puebla, 2012).
3. In ENLACE 2012, the proportion of students that showed an insufficient level of mathematics by level of marginalisation of the municipality was: 63% in very highly disadvantaged, 42% in highly marginalised, 36% in intermediate marginalisation, 29% in low marginalisation and 25% of very low marginalisation (SEP, 2012b). The level of marginalisation is established by CONAPO drawing upon measures of education, housing, income and geographic dispersion.
4. It may be difficult for prospective students to understand the characteristics of different options, as there are programmes with similar content but different names, and employers may not have a clear view on the value of similar qualifications (e.g., between the qualification *profesional técnico* offered by one provider, CONALEP, and the *técnico profesional* offered by another, DGETI) (Kis, Hoeckel and Santiago, 2009).
5. Note that this figure also includes students in the *Bachillerato Tecnológico*. According to national statistics, the proportion of students enrolled in general programmes was only 60% in 2009-10, which is similar to the OECD average (INEE, 2012).
6. The situation of teachers at the national level is slightly better: 17% work full-time, while 59% work per hour (INEE, 2012).
7. Indeed, the PROFORDEMS requires beneficiaries' commitment to two years of service after completing the programme.
8. In Finland, the Telkkä programme included a two-month on-the-job period for vocational teachers during which teacher and workplace trainers pairs were formed. Teachers reported a wide range of benefits: increased familiarity with recent work

practices and requirements and the equipment used, easier access to firms for study visits and lectures, increased confidence, respect from students and motivation (Cort, Härkönen and Volmari, 2004).

9. Literacy and numeracy are particularly valuable in the long run (Kézdi, 2006), especially in sectors facing rapid technological change and workers in low-technology industries need to be able to switch jobs as they are at higher risk of job loss (Smits, 2007).
10. The vast majority (99%) of students who finish lower secondary education move on to upper secondary as estimated by the ratio between new entrants in upper secondary education and basic education graduates of the previous year (INEE, 2012).
11. For example, CONALEP tracks the academic achievement of students and tries to find alternative solutions for those at risk of dropping out. In COBAEP, a survey is applied to all students to track attendance, subjects failed, behaviour problems, pregnancy, and provide them with educational guidance in the classroom (Proyecto Educativo, 2012).
12. The amount depends on the year of the students (students in 2nd and 3rd year receive more), their gender (women receive more) and their academic achievement (students with higher achievement receive more) (SEP, 2012d).
13. Most individuals (65%) indicate that economic incentives would help them to return, while some refer to a relevant programme or institution (27%), flexible times (27%), a specific programme for workers (25%) or a shorter and practical course (21%).
14. In some countries, switching between academic and vocational programmes does not delay completion: in Norway, 53% of the initially vocational students graduated with a general diploma within the stipulated time (OECD, 2012a). The difference in graduation rates on time between academic and vocational students (16 percentage points) may be explained by the composition of intake more biased towards students with low academic performance and disadvantaged backgrounds. Two years after the theoretical duration of the programme, almost all students (85%) successfully complete their programmes (OECD, 2012a).
15. The impact of mandatory measures on overall completion rates is still inconclusive. Rumberger and Lim (2008) claim that it does have an impact whereas Bradshaw *et al.* (2008) point to the fact that several states in the United States have raised the age of compulsory schooling to 16, 17, or even 18 years of age, but that as yet there is little conclusive evidence of the impact of such a policy.
16. Initial Vocational Qualification Programmes (PCPI) were introduced in 2009 to provide more flexibility to complete lower secondary education. The target are 16 years-old students and older who do not hold a lower secondary certificate, and 15-year-olds on certain conditions. Initial vocational qualification programmes include specific modules which allow the student to receive training in a particular professional area; general modules to develop basic competences and to ease transition from the education system to the labour market; and modules leading to the Certificate in Compulsory Secondary Education (OECD, 2012b).
17. In Mexico, the evolution of grade repetition and dropout rates between the school year 1990-91 to 2010-11 shows a clear linearity, with a correlation coefficient of 0.81. Moreover, the coefficient of determination indicates that grade repetition explains 66% of the variation of the dropout rate (SEP and COPEEMS, 2012).

18. To reduce grade repetition, OECD countries have implemented a range of strategies, including i) introducing comprehensive and flexible criteria to determine which students are held back, from written test to oral exams; ii) limiting repetition to the subjects or modules failed instead of whole year-repetition (*e.g.*, Canada, New Zealand, United States), such as promoting students in Mathematics but retaining them in a language class; iii) limiting the number of times that students may repeat and in which grades, such as avoiding repetition in transition grades or only applying it to grades considered as foundational; iv) granting conditional progression to the following grade, subject to performance in those subjects, or offering transition programmes allowing students to attend both new and failed classes; vi) allowing students to change to other equivalent educational programmes without undermining their further educational opportunities.
19. Some OECD countries have made important efforts to increase completion rates by diversifying the sorts of programmes and qualifications provided (Lamb, 2008): i) varied requirements for qualifications (*e.g.*, diplomas based on a prescribed number of core subjects and a range of electives); ii) alternative pathways for secondary school graduation (*i.e.* recovery, alternative or adult programmes); iii) work-based training contracts (*i.e.* apprenticeships and alternative routes of work, training and study). For example, in Norway, the Certificate of Practice Initiative offers at-risk students a two year programme (school and practice based) recognised by industry and, upon completion, they can complete their full upper-secondary degree completing the remaining two years. Results from the pilot show that dropout rates are very low and 65% of the students continue their education (OECD, 2012b).
20. In Portugal, the “New Opportunities” programme was launched in 2005 to provide a second chance to individuals who left school early or are at risk of doing so and to assist those in the labour force who want to acquire further qualifications. More than 40% of the students concerned were older than 25 and the programme resulted in 41 percentage points higher graduation rates in 2010 than in 2008 (OECD, 2012a).
21. For example, in Norway, the Youth Right entitles students who are 15 years old and have completed lower secondary education to three years of full-time upper secondary education in one of the programmes of their choice during a period of five or six years since completion of lower secondary. Other students can also enrol but are not given priority in admission to a programme of their choice (OECD, 2010).

Annex 4.A1. Providers of upper secondary education in Puebla

Table 4.A1. Providers of upper secondary education in Puebla

System	Funding source / governance	Programme	Students 2011 - 2012	Number of schools
Bachilleratos Generales (General High Schools)	State / State	General USE plus job training (15 programs)	116 190	859*
Colegio de Bachilleres de Puebla (COBAEP)	Mixed (Federal + State) / State	General USE plus job training	24 698	37
Colegio Nacional de Educación Profesional Técnica (CONALEP)	Federal / State	Technical USE. General competencies and job training	7 685	11
Centro de Estudios Científicos y Tecnológicos (CECyTE)	Mixed (Federal + State) / State	Technical USE. General competencies and job training	2 435	17
Bachilleratos Digitales (Digital High Schools)	State / State	General USE. Two teachers for all subjects, with a Media Lab and appropriate materials	4 000	45
Preparatorias de la Benemérita Universidad Autónoma de Puebla	Federal / Autonomous	Bachelor college preparatory general, autonomous High School.	12 889	20
Universidad del Desarrollo (UNIDES High Schools)	State / State	General USE. Hybrid system (classroom and online courses). Intended for the young and adults.	669	6
Centros Escolares (School Centers)	State / State	All levels from preschool to general USE. Higher education recently included in one school	14 759	32
Centro de Bachillerato Tecnológico, Industrial y de Servicios (CBTIS)	Federal / Federal	Technical USE. General competencies and job training: industry and services.	15 562	15
Centro de Bachillerato Tecnológico, Agropecuario (CBTA)	Federal / Federal	Technical USE. General competencies and job training: agricultural	3 606	9
Private schools	Private	Mostly general USE	46 059*	501*

Source: Proyecto Educativo SC (2012), *Background report on education in the state of Puebla*, Proyecto Educativo SC, Puebla.

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Chapter 5.

Improving education infrastructure in Puebla

Well-designed, constructed, equipped and maintained schools that inspire and facilitate learning are critically important for improving the quality of education in Puebla. Significant steps have been taken in recent years to improve school infrastructure, such as higher investments through the Peso-a-Peso programme or innovative delivery ways through ICTs. However, the absence of strategic planning and decades of underinvestment have left their mark: lack of basic facilities, deterioration, overcrowded classrooms, untapped external spaces, little sharing of facilities between schools or other organisations. Also, shortages prompt schools to fundraise from parents' associations particularly hindering disadvantaged schools and exacerbating social inequalities.

To improve education infrastructure, this chapter looks into policies to:

- ▶ *Entrust a single body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan.*
- ▶ *Secure adequate and equitable funding for school infrastructure.*
- ▶ *Ensure that the design and use of the existing or new school infrastructure fosters student learning.*

Well-designed, constructed, equipped and maintained schools that inspire and facilitate learning are critically important for improving the quality of education. Despite the efforts made in recent years, decades of public underinvestment in school infrastructure have left their mark in Puebla. Many school buildings lack basic services and facilities or have deteriorated to an extent that they hamper effective teaching and learning. In addition to tight budgets, the infrastructure suffers from lack of adequate planning, and there seems to be little adherence to and enforcement of building codes and standards.

*However, there is reason for optimism too. Significant steps have been taken in recent years to improve school infrastructure in the state, such as the *Peso-a-Peso* programme, which provides matched funding to municipalities for school improvement; the *Digital Skills for All* programme, which equips schools throughout the state with information and communication technologies; and the introduction of needs' criteria in the allocation of funds. Now, the upcoming demographic changes in Puebla provide an opportunity to optimise school infrastructure.*

The governance and funding of basic and upper secondary infrastructure

The governance

In Mexico, the design, construction and management of school facilities was a federal responsibility under the *Comité Administrador del Programa Federal de Construcción de Escuelas* (CAPFCE), which was part of the federal Secretariat of Public Education (*Secretaría de Educación Pública*, federal-SEP hereafter), until 1997. These responsibilities were then devolved to the states, which became responsible for the construction, renovation and maintenance of public school buildings, while the federal government retained a leading role in setting standards and funding infrastructure.

In line with its changed role in school infrastructure, the federal government in 2008 set up a separate agency, the *Instituto Nacional de la Infraestructura Física Educativa* (National Institute for Physical Infrastructure for Education, INIFED), as a regulator of construction standards (e.g. safety, health and sewerage) for education buildings that all states must follow. This was done under the Educational Facilities General Law, which also sets out the legal framework for the construction, renovation and maintenance of school infrastructure nationwide, and for the preparedness and response to natural disasters. Although the federal government has stepped away from the “frontline” management of school infrastructure, it still provides the lion’s share of funding for educational infrastructure via earmarked transfers to the states and specific school programmes.

In Puebla different bodies are involved in planning, funding, delivering and managing infrastructure. The *Comité Administrador Poblano para la Construcción de Espacios Educativos* (Puebla Management Committee for the Construction of Educational Spaces, CAPCEE) is a decentralised agency of the state government that is responsible for managing the construction, equipment, renovation and maintenance of school infrastructure. It follows the guidelines and standards set by INIFED, although the state has some leeway to set its own guidelines as long as they do not contravene those of the federal agency. The *Dirección General de Planeación y Programación Presupuestal* (General Direction of Budget Planning and Programming, DGPPP) is responsible for evaluating projects, allocating funds and making decisions about school closures. The

state Secretariat of Finance is also involved, mainly by ensuring compliance with financial procedures.

Municipalities and schools also play an important role. Municipalities might contribute to financing school infrastructure and can promote the creation of new education services. Schools are not given a budget to manage their facilities; they rely on federal and state funding or programmes, such as those for paying utilities (*e.g.* electricity, water, telephone), but because these are usually insufficient, schools are forced to fundraise, mainly from parents' associations (see below).

Today, there is no federal or state-level medium and/or long-term planning for school infrastructure in Mexico or Puebla. Instead of having an overall strategy at the federal, state or municipality level, schools identify their specific needs annually, and responses to those needs appear to be *ad hoc* or inexistent.

Funding of education infrastructure

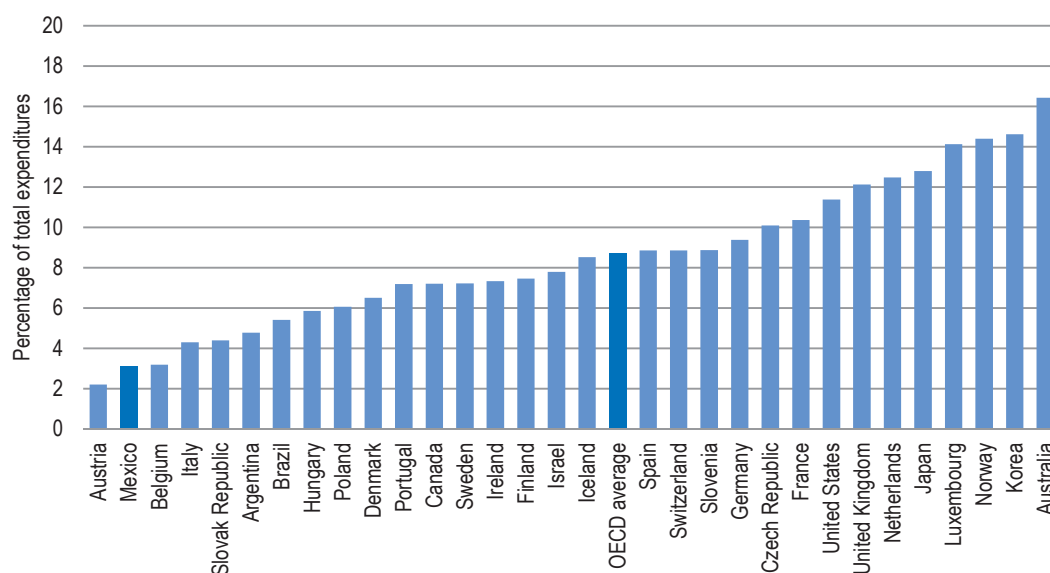
In Mexico, and in Puebla, there is no coherent medium or long-term funding strategy for school physical infrastructure and public resources devoted to it are limited. School maintenance or construction projects are financed through a number of programmes and mechanisms that demand that municipalities or schools apply for funding. Since public authorities have not allocated sufficient resources; families and local communities often shoulder a substantial part of the burden for school operation (*e.g.* maintenance, cleaning) (Proyecto Educativo, 2012).

The overall public and private expenditures on education infrastructure are very small in Mexico compared to other OECD countries. In 2009 Mexico's capital expenditure, which refers to the spending on assets that last longer than one year (*e.g.* construction, renovation or major repair of buildings and new or replacement equipment), was 2.6% of its primary school budget and 3.6% of its secondary school budget, compared to 9.1% and 8.4%, respectively, across OECD countries (See Figure 2.1) (OECD, 2012a) and below countries such as Argentina and Brazil. In Puebla, overall expenditures on school infrastructure represented only 4% of the overall budget for education (Proyecto Educativo, 2012).

As public investment in infrastructure is small and maintenance costs are not separated in the education budget maintenance has typically been deferred (Proyecto Educativo, 2012). International figures for other expenditures on infrastructure, such as maintenance of school buildings or rental of facilities, are included with expenditures on sub-contracted services. Although the former cannot be disentangled from the latter, in Mexico jointly these are among the lowest in OECD countries (OECD, 2012a), which suggests that expenditures on maintenance and rental are small.

Figure 5.1. Capital expenditures are small in Mexico

Total public and private expenditures on capital in primary, secondary and post-secondary non-tertiary education (2009)



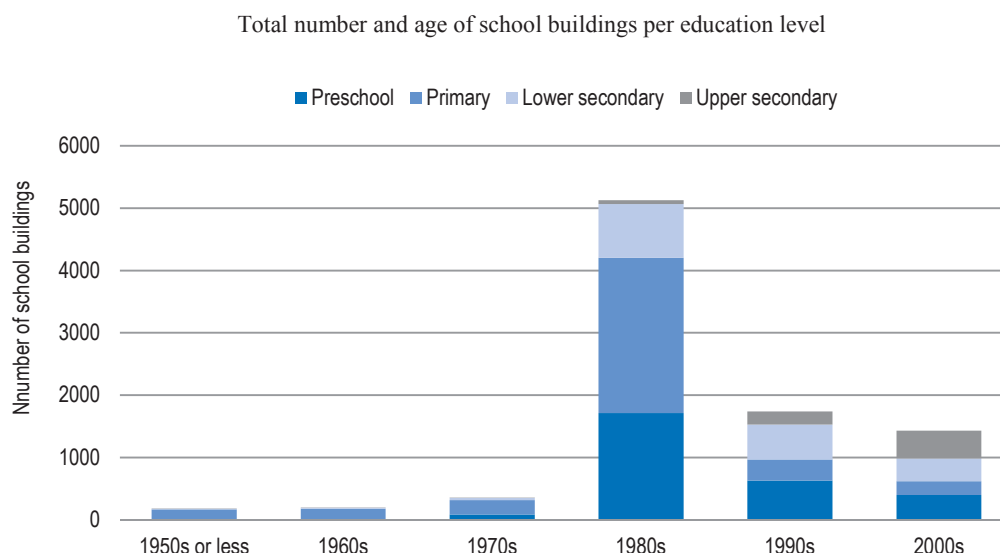
Note: "m" refers to missing data. For Canada, data refers to year of reference 2008. For Mexico, Italy, Argentina, Brazil, Hungary, Poland, Portugal, Ireland, Spain, Switzerland, Chile, data refers to public institutions only (For Italy, except in tertiary education). For Chile, data refers to year of reference 2010. For Slovak Republic, Denmark, Canada, Iceland, and Japan, some levels of education are included with others. Non OECD member economies are included for comparison.

Source: OECD (2012a), *Education at a Glance 2012: OECD Indicators*, OECD Publishing, <http://dx.doi.org/10.1787/eag-2012-en>.

StatLink  <http://dx.doi.org/10.1787/888932830293>

Condition of school buildings and fitness for learning

There are 9 404 public school buildings from pre-primary to upper secondary education in Puebla. While Puebla can meet the current demand for basic and upper secondary education, in some places classrooms are overcrowded and a significant proportion of schools use the same school building in morning and afternoon shifts. In addition, the majority of the school buildings (77%) are 20 to 40 years old. While very few (4%) were built more than 50 years ago and only 19% were built in the past 10 years (Proyecto Educativo, 2012). A significant number (55%) were built in the 1980s, which reflects the pattern throughout Mexico at the time when a large school construction programme was needed to meet the demands of a growing population of school-aged children.

Figure 5.2. Most of the school buildings date from the 1980s

Source: Proyecto Educativo S.C. (2012), *Background Report of Puebla*, Secretaría de Educación Pública del Estado de Puebla, Puebla.

StatLink  <http://dx.doi.org/10.1787/888932830312>

The condition of schools can indicate to the community the value of schooling as schools shape the appearance and atmosphere of surrounding environment (OECD, 2011a). In Puebla, chronic underinvestment in maintenance and upgrading of schools has left many buildings in need of modernisation. A 2011 survey of school principals showed that 88.4% of the 45 808 classrooms in Puebla are in either good or fair condition but the rest, about 5 300, are in need of renovation. However, responses to the survey seem to focus on the exterior physical condition of the classrooms and do not necessarily reflect whether the classrooms are appropriate, or safe, to be used for learning. Many schools in the state of Puebla do not have sufficient classrooms, or any laboratories, libraries or spaces to practice sports. In the worst cases and far from OECD standards, even more basic equipment is missing, for instance, 14.7% of the state's schools have no bathrooms. One of the major concerns is the lack of basic services in schools: 28% of schools have no electricity and/or running water (Proyecto Educativo, 2012).

While research shows a weak association between school-based inputs, including infrastructure, and education outcomes, research also consistently shows that the absence of essential facilities is detrimental to learning¹ (Murillo and Roman, 2011; OECD, 2012c). Adequate physical infrastructure and up-to-date textbooks do not guarantee good learning outcomes, but the absence of such resources is likely to have a negative effect. Moreover, their quality and use also matters. In PISA 2009, Mexican school principals' reported that the quality of their schools' educational resources (*e.g.*, science laboratory equipment, instruction materials, computers, Internet access, library) hinders instruction (OECD, 2010a). In Mexico, the index on material resources is highly correlated with schools' socio-economic background, and a one-unit increase in this index is associated with 25 score units more on the average school in PISA (OECD, 2010a).

The demographic change presents a unique opportunity

The school population will most likely continue to shrink in the years to come. Following rapid population growth throughout the 20th century, in which the population grew from just over 1 million in 1900 to 5.8 million in 2010 in Puebla, now birth rates are falling. However, following the national trend, Puebla's population growth rate has fallen from 2% in 1990 to 1.4% in 2010 (INEGI, 2011a) and international outflows has been increasing since 1950. In 2017, there are likely to be 117 000 fewer 5-14 year-olds in education than in the year 2011 and a reduction of over 4 600 15-17 year-olds in the same time period. (Proyecto Educativo, 2012). However, a recent central government reform stipulating universal coverage of upper secondary education by 2021-2022 is likely to offset the declining demographic pattern, increase enrolment in upper secondary education and drive up the demand for further education.

These demographic challenges provide the state of Puebla with a unique opportunity to optimise its provision of education, including its school infrastructure. Fewer buildings will be needed for basic education and more will be needed for upper secondary. Therefore, school closures, renovations or construction will have to be considered in light of the changing demand for education services.

Priorities and opportunities for the years ahead

Students in Puebla should be attending basic schools and upper secondary institutions that are well-constructed, equipped and maintained to meet their learning needs and be inspiring places in which to learn. The schools should represent how much Puebla values education. They should be flexible learning environments that enable different styles of teaching and learning and be inclusive to all. They should be safe, support the health and well-being of students and teachers, and actively linked with the local and global community. Some immediate steps to improve school infrastructure in Puebla include:

- *Improve planning of school infrastructure:* Entrust a body (which could be an enhanced CAPCEE with wider powers and more resources, or a new body) with overall responsibility for school infrastructure and develop a long-term school infrastructure plan.
- *Secure funding to the neediest schools:* Secure adequate and equitable funding for infrastructure by targeting the neediest schools, limit the potential impact of parental contributions on equity, and explore ways to meet capital expenditure needs.
- *Ensure that the existing or new school infrastructure fosters learning:* engage with future users to make school infrastructure more adequate for learning, support schools to develop their own infrastructure plan and promote a better use of the existing facilities.

Recommendation 1: Entrust a body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan

The Puebla context

The need for new school facilities, whether an entire building or extensions to existing facilities, may be identified by municipalities or schools. CAPCEE or supervisors also identify schools' infrastructure needs. However, in Puebla, there is no school infrastructure plan for the medium or long-term, whether by schools, municipalities or the

state. Assessments of infrastructure needs, if they exist, seem to occur *ad hoc* or annually rather than being based on a systemic diagnosis of the condition of school buildings and projected enrolments and needs.

The lack of planning is illustrated in the mushrooming of *Bachilleratos Generales*, the state general upper secondary schools. The creation and rapid expansion of these schools was not based on a supply-demand analysis but on political pressure from different actors to open in particular municipalities. As a result, many small and low quality upper secondary schools were built relatively close to each other, whereas for instance, a single larger upper secondary institution could allow for more facilities. Some of this *bachilleratos* are housed in sub-standard facilities that are potentially unsafe or not designed for learning, or in buildings where long-term access is not guaranteed (Proyecto Educativo, 2012).

Poor planning partially results from the lack of data on school infrastructure, though important progress has been made by the federal-SEP on data collection in recent years. The first inventory of education infrastructure was carried out in 2007 and resulted in the Catalogue of School Buildings (*Cátalo de Inmuebles Escolares*). However, the federal-SEP has not made public the Catalogue and it is unclear whether it is used in planning and funding infrastructure at national and state levels (Campos, Jarillo and Santibañez, 2010). It seems that the information was at least partially used to define the extent of INIFED's Better Schools programme (Blyth et al, 2012a).

SEP-Puebla is developing a database of information (*Sistema Integral de Información Educativa Estatal, SIEES*) that covers over 80% of the public schools from pre-school to upper secondary, and can be accessed and updated by school principals and CAPCEE. This database provides information on each school, including the general characteristics of the buildings, such as the number of classrooms, laboratories, workshops, types of buildings, age and utilities services. The aim is to give some indication of the physical state of the building and, as the database develops, it will include the plans of buildings and information on work undertaken. Currently, data is mainly provided and updated by school principals.

The governance of educational infrastructure is characterised by an unclear division of responsibilities that facilitates under-provision and blame-shifting. Government actions are isolated and there is little co-ordination between the actors involved, leading to a system that is unresponsive to school needs and is rife with duplications, delays, and poor results. For example, buildings might be constructed, but local authorities do not connect the sewerage system, or ICT equipment is installed, but there is no power supply or adequate maintenance. Because a large share of funding is earmarked and does not cover all needs, works may be uncompleted when local funding is insufficient.

The process of delivering a construction project for a school varies depending on the financial sources. The initiative to determine the facilities needed to meet changing demand, particularly students, or essential maintenance is often raised at the school level. Each year schools assess their needs for the following school year and determine what resources, including physical infrastructure, will be needed. However, whether these needs can be met depends on the financial resources available, which usually come from the school itself, the municipality, state or federation.

When funding comes from federal or state funds, the SEP-Puebla usually manages the application process. Initially the General Direction of Budget Planning and Programming in Puebla, whose role is to assess projects and allocate funds, reviews the facilities and

funds requested, and then informs CAPCEE of the number and types of spaces and facilities needed. A specific budget can be automatically allocated when the work involves improving classrooms and toilets as established by the *Fondo de Aportaciones Múltiples para Educación Básica* (FAM) upon meeting the criteria and availability of funding. CAPCEE assesses the works required, prepares a technical file with the design and construction specifications and, after inspection of financial compliance by the state Secretariat of Finance, begins the procurement process.

However, when municipalities or schools have enough resources, they may undertake the infrastructure work without formally informing or involving state or federal authorities at any stage. This option may be preferred as applying for federal or state funding generally entails a long and cumbersome process that can take two years, at the end of which funding is not assured and the costs could be higher. Municipality or school initiatives might lead to the construction of facilities that do not meet building standards or may be unsafe. In spite of this, there appears to be no systematic evaluation of the extent to which municipalities or schools procure their own facilities. This suggests weak enforcement of building codes and standards, as well as potentially unreliable information for future policy and planning.

The dispersed and shrinking school-aged population in some regions significantly increase the costs and provision of education services. The demographic changes have already prompted 127 school closures since February 2011, including temporary closures when the required number of students was not met. A school will permanently close after three years of insufficient demand (Proyecto Educativo, 2012). Since Puebla territory is uneven, mountainous and located in an area of seismic risk, co-ordination with other agencies is essential. This includes evaluating structural risk by the Civil Protection Agency (CPA) when there is an earthquake or another natural disaster that damages buildings.

The international context

Effective planning and management of educational infrastructure is a highly complex and resource intensive task. However a common characteristic in well-functioning governing systems is the development of a co-ordinated approach in which the roles and responsibilities of all parties are clearly defined and articulated. In OECD countries where state or national agencies assume the responsibility for overseeing school facilities, much of the design work is outsourced to architects or construction contractors familiarised with the education sector, providing them with a brief that gives the number and types of spaces to include. Very often there are local or national guidelines and standards that set out expectations in terms of sizes of spaces and their functionality. The role of such agencies is to manage the delivery of projects, acting as the “informed client” rather than as the supplier of services. Agencies can be national and semi-autonomous from government ministries, or this role is performed within a government ministry. The Department of Education and Early Childhood Development in Victoria (Australia) provides an example of the later, while the *Parque Escolar* in Portugal illustrates the former (Blyth *et al*, 2012b).

Since the 1970s, OECD governments have tended to decentralise some of the education functions to local authorities and schools but look to retain control over larger building programmes. Local authorities are often now responsible for financing, design, construction and maintenance of educational buildings for pre-school to upper secondary level, whereas tertiary education is usually overseen by the central government (OECD,

2000). Decentralisation allows for greater adaptation to local conditions (*e.g.*, cultural values, climate, geography) and more participation of local communities in the planning, designing and maintenance of schools. However, local authorities may not have enough human and financial resources to design and translate a sound educational and social vision into architecture and services. Increasing school autonomy has shifted some of these responsibilities to schools. In some countries, the responsibility for managing school buildings is delegated to school boards and the school principal, and they are given a specific budget. In the United Kingdom, for example, a certain amount of funds is allocated to every school for maintaining and replacing high-cost items, such as windows and roofs (James, 2011).

Many countries are or have been tackling deteriorating learning environments, including Portugal (Blyth *et al.*, 2012b), England, with its Building Schools for the Future Programme, and Australia, through its Building Education Revolution programme and National School Pride programme (Blyth *et al.*, 2012b). All of these programmes consider the learning needs of students

Box 5.1. Tackling deteriorating learning environments in Australia, England and Portugal

Portugal's Secondary School Building Modernisation Programme began in 2007 with a budget of EUR 2.45 billion and aimed to renovate over 300 secondary schools that had deteriorated, but the new government in 2011 scaled back the programme in the face of economic pressure. The government set up the agency Parque Escolar to manage the programme, which involved rehabilitating existing schools and constructing additional facilities in some schools. In Portugal there were 477 schools used for public secondary education, 77% of which were constructed after 1968 when the school network expanded with standard designs that were quick and economic to build. The OECD review found that creating a special-purpose state-owned agency with responsibility for planning and delivering the programme was a crucial factor in its success. It was also important to engage other education bodies within the country to know how the quality of the environment was impacting on education delivery and support them on how to reconfigure furniture in the classrooms to enable different learning modes such as group work or individual work.

In **England** (United Kingdom), the Building Schools for the Future (BSF) programme was launched in 2003 with the aim of renewing the 3 500 secondary schools between 2005 and 2020. It aimed to rebuild half the school estate and refurbish and renovate the rest at an overall cost of GBP 55 billion (2009 prices). In 2004, the agency Partnerships for Schools was set up by the government to manage the delivery of the programme. Funding was split between the government and a private financing initiative. The objective was educational transformation and funding was prioritised depending on the level of deprivation of the area that a school was in, and on student attainment levels. The newly elected Government replaced the programme in July 2010 partly under pressure to cut public spending but also due to concerns about the complex delivery process (James, 2011), especially regarding the public private partnerships and the number of different organisations involved at national and local level. By March 2011, 310 schools had benefited from BSF investment and a further 694 are expected to be rebuilt or refurbished between 2011-15.

Box 5.1. Tackling deteriorating learning environments in Australia, England and Portugal (continued)

Australia's Building Education Revolution programme was an economic stimulus programme from the federal government which injected 16.2bn AUD into Australia's schools, to provide rapid construction and refurbishment of schools, the largest school modernisation program in Australian history. With three elements: the National School Pride programme for which \$1.29 billion was provided for minor capital works and refurbishment; Primary Schools for the 21st Century (P21) is providing \$14.1 billion for Australian primary schools to build new iconic facilities, or to upgrade existing facilities by 31 March 2011; and Science and Language Centres for 21st Century Secondary Schools (SLC) is providing \$821.8 million for the construction of new, or the refurbishment of existing, science laboratories or language learning centres in secondary schools.

Source: Blyth *et al* (2012b), *Modernising Secondary School Buildings in Portugal*, OECD, Paris; James, S. (2011), *Review of Education Capital*, Department for Education, London; James, (2011); Australian Government, The Department of Education, Employment and Workplace Relations, *Building the Education Revolution*, Australia, <http://deewr.gov.au/building-education-revolution>.

Strategies for action

1A. Entrust a body with the overall responsibility for school infrastructure in order to improve planning, delivery and enforcement

Puebla may consider entrusting a single body with the lead role or the overall responsibility for school infrastructure to enable more coherent planning and better co-ordination across several government departments and agencies. The core and most important tasks of this body would be to devise a strategic plan to improve education infrastructure (see Recommendation 1B) and to put forward a clear governance framework in which the different roles and procedures are well-defined, in order to improve planning, and ensure accountability of the resources used.

One option could be to identify one body within the current structure that could be assigned with this role, such as CAPCEE or the Undersecretariat for Planning, Evaluation and Innovation. A second option could be to create a new body for this purpose. If none of these is possible, the current arrangements could be improved by strengthening the coordination mechanisms, assigning a leadership role to one of the main actors involved and clarifying the responsibilities of the other actors. The existence of a single body with these responsibilities may facilitate the development and implementation of an infrastructure plan. In addition, it should ensure compliance with standards and other state and federal regulations as well as provide guidance and technical support to schools and municipalities in meeting standards and improving the design and use of educational spaces.

Another important task of this body could be to review and, where possible, streamline the construction project approval procedures. For example, for small projects, the approval procedures could be relaxed and accelerated. By delegating approval to a specific body to spend resources on construction projects annually as part of a programme of work agreed with the Secretariat of Finance, the approval process would be much faster. At the end of the year, the Secretariat of Finance could then audit the projects to

ensure transparency. In Ireland, for example, the unit that manages school buildings has the authority to spend money on projects within a five-year programme of work as agreed upon with the Secretariat of Finance.

Additionally, this body could explore ways to increase the enforcement of norms and standards for school buildings. To this end, the state could consider several options:

- *Improve the existing inspection of infrastructure.* In many countries, the enforcement of the building code (e.g. structural, seismic, health and safety, and energy) and building standards (e.g. acoustic requirements, lighting) is performed by local authorities. However, considering that municipalities might also be involved in non-compliant constructions, endorsing municipalities with an enforcement role may not always be advisable.
- *Set up a specific group within the overarching school infrastructure body to conduct random or targeted on-site visits.* These would be particularly useful for recommending and supporting schools to undertake corrective actions in cases where construction standards were not met. These visits and follow-up actions could also facilitate verification of data on school infrastructure in the state information system (see recommendation 1B).
- Establish formal communication channels between the specific group of CAPCEE currently in charge of inspecting schools infrastructure with supervisors and CORDES. The aim should be to create synergies and respond to schools needs while avoiding duplication of tasks and unnecessarily overlapping.

1B. Further develop and use the information system to create a long-term infrastructure plan to meet present and future education needs

A long-term state-wide school infrastructure master plan that corresponds to the education strategy is a key tool to optimise school infrastructure in a period of significant demographic changes. In order to achieve this, Puebla can 1) consider further developing and using their information system for prospective planning and 2) develop a long-term plan, which should set out a strategy for school transformation (*i.e.* closures, mergers) to meet education needs but also to improve the efficiency, equity and the quality of education provided.

Developing the information system

A first step could be to further develop the *Sistema Integral de Información Educativa Estatal* to enable prospective planning. Accurate data and information on the existing facilities and demographic projections are fundamental to planning the physical infrastructure. The state could use the information system to identify where the schools or upper secondary institutions should be located; examine the potential influence of its closure on enrolment in surrounding ones; highlight the extent of differences and disparities, or show a potentially incoherent distribution of education centres. The information system should be publicly accessible to provide information about the condition of education infrastructure and facilitate planning and accountability to educational authorities and the school community as well as the public. To optimise resources and reduce school administrative burden, the information system should be coherent to the early warning system suggested to track and support students throughout

their education (see Chapter 2 Recommendation 2A and Chapter 4, Recommendation 2A) as well as to the national efforts to develop a system.

However, the information system will not be useful unless the data accuracy and timeliness of the information are maintained. One important issue to consider is coverage; while the database already covers 80% of public schools, SEP-Puebla should aim at including all schools. Another key aspect is the depth and breadth of information available, which should include a system-wide detailed and accurate technical assessment of the quality of school buildings as well as relevant indicators on how they meet the current and future needs of education in Puebla. Data is currently gathered through a survey distributed to school principals and, since they may have incentives to misreport, other collection or verification methods should be envisaged. To facilitate prospective planning, traditional educational data (*e.g.* schools, teachers, students) should be combined with geographical data (*e.g.* location of schools, rivers, roads) into a Global Information System (GIS).

Long-term planning

A second step could be to use the information system to develop a long-term school infrastructure plan for meeting present and future demands. The state should consider drafting a plan that sets out the state's vision, ambitions, and objectives for school infrastructure that respond to, and are aligned with, the state's overall education plan. Moreover, the plan should establish clear targets on school infrastructure, which are essential for determining the costs of the plan, and enable the prioritisation of funds (see Recommendation 2A). A realistic estimation of costs as well as identification of potential financial sources to meet commitments are cornerstone (see Recommendation 2C). Also, while main responsibility remains to SEP-Puebla, stakeholders (*e.g.* schools, communities, municipalities, the state, NGOs, the private sector) should be involved in the development of the plan.

The key element of the long-term plan should be a strategy to maximise the benefits of the forthcoming demographic changes and optimise the school network and limited resources. The state should explore ways not only to ensure access to education but also to increase the quality of provision, enable efficiencies and to provide a more equitable distribution of learning opportunities. The following are some options that the state could consider:

- Merging or closing schools of the *same* level or type in response to the declining student-aged population in an area since small schools are likely to be more costly and can be detrimental to learning.
- Merging schools of *different* levels, which should result in a more cost-effective use of school resources and can smooth the transitions and facilitate following students throughout their education (see Recommendation 3D in Chapter 2). This could include integrating lower and upper secondary schools.
- Consolidating upper secondary schools that are in close proximity to each other to create economies of scale, reduce the current incoherent distribution and address the existing quality concerns, particularly as regards of Bachilleratos Generales (see Recommendation 1A in Chapter 4).
- Conduct targeted feasibility studies on existing primary and lower secondary schools to explore the opportunities for converting them into upper secondary institutions before creating new ones.²

- Explore innovative ways to deliver education services, such as ICT based learning and distance learning, to expand education. The state has already put into place an innovative way of delivering upper secondary education through digital means. *Bachillerato Digital* schools should be evaluated and, if the results are positive, the state could consider ways to scale them up, which may involve adapting existing lower secondary facilities to foster efficiencies (see Recommendation 1A in Chapter 4).

To ensure successful implementation, the school infrastructure master plan should be reviewed on a regular basis to take stock of progress, outline remaining work and lessons learned that could support further implementation. Also, reviewing the plan will allow to take into account changing conditions such as other aspects of government policy (on education), demographic changes and funding availability. Each school in the state should be encouraged and supported to develop its own master plan that is in line with and supports the achievement of the state's objectives and targets (see Recommendation 3B).

A range of different planning approaches have been developed within national and sub-national authorities of OECD countries. For example, Portugal successfully implemented a carefully planned large-scale policy of small schools closure as a result of declining students enrolment (see Box 2.1). In Scotland, school infrastructure needs are ingrained in the general policy framework set by the Government (Scottish Government, 2009), which provides an overall vision backed up by 9 guiding principles. These are: consultation, innovative design, holistic thinking about school environments, inclusiveness, maintenance, environmental sustainability, and management of the school facilities, supporting effective teaching and learning, schools service the community. Another example is the New Zealand School Property Strategy 2011-2021 which sets out a ten year strategy (Ministry of Education of New Zealand, 2011) upon three principle goals: that the school is well managed; schools are fit for purpose; and, they are high performing, responding to changes in demand, are well used and efficiently run. The common feature of these approaches is that infrastructure needs are not treated in isolation from wider education policy, but are seen as an integral part of it.

Box 5.2. A large-scale programme to close small rural schools in Portugal

Portugal has a tradition of small primary schools often with a single teacher working in isolation and where students are frequently taught in mixed age groups. In the school year of 2005/06 there were 7 400 first-cycle schools with for 416 500 pupils, but 1 570 schools had fewer than 10 pupils and 1 300 had between 10 and 20. Rural areas were dominated by small schools with poor facilities, while urban areas had overcrowded schools with double shift education. Research showed inefficiencies, lower academic performance in smaller schools, higher teacher turnover and variable quality in rural areas.

The government determined that small schools with grade repetition rates higher than the national average were to be closed during 2005/06 and clusters of larger schools should be created. The reorganisation and redeployment programme had several instrumental features: (i) there was a clear central vision about what type of schools should replace the closing schools, which were larger school centres with a minimum of 150 students at more than one level and full-day school with enrichment activities; (ii) it was recognised that parents needed to be convinced that the outcomes for them and their children would be better and incentives, including free transport, were provided to attend further schools; (iii) municipalities needed incentives to invest in new provision; (iv) the consultation and decision-making processes needed to be applied carefully as previous attempts to close schools had failed.

Box 5.2. A large-scale programme to close small rural schools in Portugal (continued)

Plans were made in consultation with schools and resulted in a large number of different ways of clustering schools and school closures were applied progressively beginning with the smallest schools. Also, the construction of new schools was carefully assessed by the Ministry of Education and the municipalities using measures such as numbers of students and schools, geographical factors and demographic indicators.

Although the degree of engagement between the five Regional Directorates and the 278 municipalities of Continental Portugal varied across municipalities, the overall effect of the implementation of the school closure policy was remarkable: about 2 500 schools closed between 2005 and 2008 compared with 1000 in the previous 10 years. In general, the reorganisation process brought about innovations and improved efficiency of the schools, reduced isolation of teachers, improved socialisation of underprivileged or isolated pupils, and fostered a collaborative approach between the Ministry of Education (centrally and regionally), municipalities, schools and other stakeholders. However, there are also inherent challenges in managing the system of clusters, particularly where there are many schools in the cluster and distances between schools are large.

Source: Matthews, P., E. Klaver, J. Lannert, G. Ó Conluain, and A. Ventura (2009), *Policy measures implemented in the first cycle of compulsory education in Portugal (International evaluation)*, Ministry of Education of Portugal, Lisbon.

Recommendation 2: Secure adequate and equitable funding for school infrastructure

The Puebla context

Resources for public school facilities come from several sources, mainly from the federal government through specific funds, and there is a lack of overall clarity on expenditures in school infrastructure, which raises concerns about accountability. To address the problems of deteriorating school buildings in Puebla, a total of MXN 892.5 million and MXN 944 million were committed by the state for all levels of education in 2011 and 2012, respectively. These amounts are almost equivalent to the total expenditure of the previous six years combined (Proyecto Educativo, 2012). In addition, infrastructure resources may also come as part of federal or state school programmes as well as from private sources, notably from parents' contributions.

The main source of public funding for infrastructure is the *Fondo de Aportaciones Múltiples para Educación Básica* (Multiple Contributions Fund, FAM), which is a transfer from the federal government and accounted for 43% of the overall 2012 budget for infrastructure in Puebla (MXN 410 million). It is earmarked for maintenance of classrooms, toilets and the rehabilitation of buildings, but the needs of schools are much greater (e.g. corridors, courtyards, fences or sports facilities). In recent years, new technologies have been widely promoted and, in 2011, 43% of the overall expenditure on infrastructure in Puebla was allocated to buying equipment and training teachers through the programme *Habilidades Digitales para Todos* (Digital Skills for All, HDT).

The main state initiative is the *Peso-a-Peso* fund, which is designed to incentivise municipalities to finance the improvement of school facilities. The state uses the budget available for infrastructure to pay half the cost of the work and the municipality finances the other half. With a total budget of MXN 194.6 million in 2011 and MXN 273.6 million in 2012, *Peso-a-Peso* has funded 757 actions across 85 and 120 municipalities, respectively (CAPCEE, 2012). In the 2012 budget, other state-run programmes include 91 renovation projects for *Bachilleratos Generales* (MXN 195 million), creating and equipping facilities for the *Bachillerato Digital* programme (MXN 10 million), and the programme *Échale una mano a tu escuela* (Give your school a hand) (MXN 80 million), in which the state provides construction or maintenance materials and the community contributes labouring.

In spite of these efforts, the overall public expenditure on infrastructure is insufficient. For example, during the period 2005-11, some 1 900 requests were submitted for consideration: 1 200 requests from municipalities were rejected as they referred to works not covered by the federal FAM fund involved; and out of 700 requests that met the requirements, there was only enough money to fund 270 projects (Proyecto Educativo, 2012). Thus only 14% of the requests submitted, or 39% of the eligible requests, were granted.

The lack of funding translates into insufficient resources in schools, particularly in disadvantaged schools. To determine which infrastructure projects will be funded, SEP-Puebla uses some measures of disadvantage, such as the level of poverty in the municipality and the number of students per classroom. In principle poorer and more populated schools are more likely to receive support (Proyecto Educativo, 2012). However, the weight of these various factors and the criteria in the overall application process are unclear. Applying for funds generates an additional burden for schools, both in terms of awareness of the eligibility of the scattered programmes available and capacity to submit an application, and disadvantaged schools and communities do not have the same resources available to them. It seems that often their success depends more on the negotiation capacities of the school leader or the supervisor, than on the needs of schools.

Thus, in practice, the ability of the school principal to raise funds is of utmost importance. He or she determines the school's needs at the end of the academic year and proposes suggested contributions from parents. Parental involvement is important either for providing financial support or labour to repair, maintain or build schools. Parents commonly contribute to schools through i) voluntary contributions at the start of the school year, which accordingly to some estimations, in Puebla range from MXN 200 in the poorer communities to over MXN 1 800 per year (Proyecto Educativo, 2012); ii) organising social events to fundraise; iii) meeting urgent needs; and iv) operating a regulated school shop (Campos, Jarillo and Santibañez, 2010).

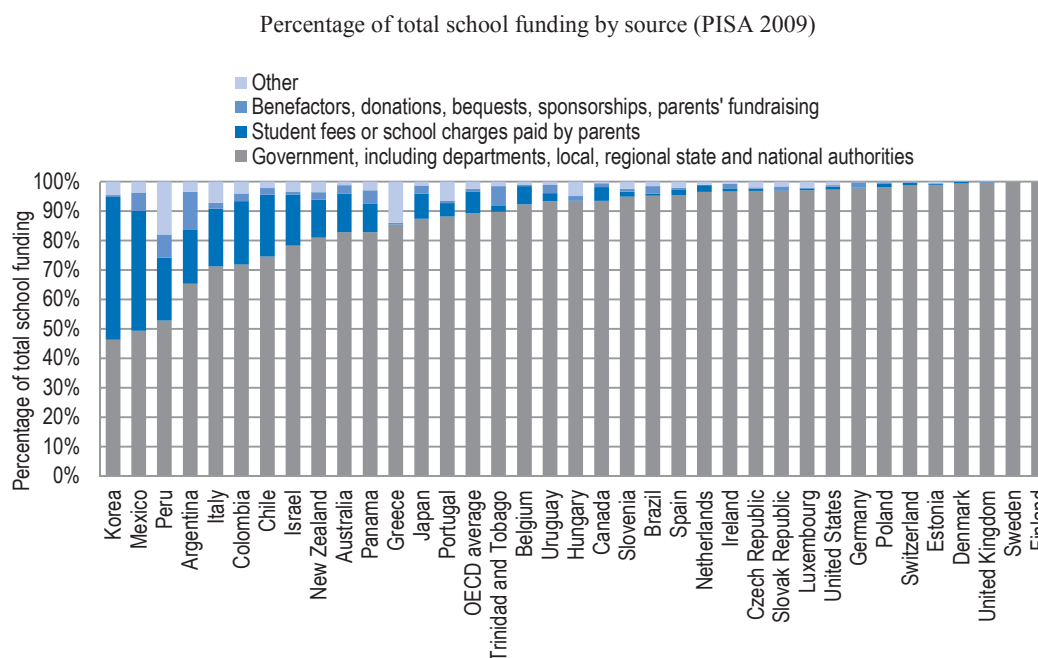
Voluntary parental contributions are widespread and indispensable rather than optional for schools. SEP-Puebla has launched some initiatives to inform parents about their voluntary nature and encouraging them to denounce deviations of resources. However, regulation of voluntary contributions is limited, and since the right to free compulsory education is enshrined in the constitution, there is no legal framework governing donations to public schools. This creates a paradoxical situation in which public schools are not entitled to receive direct donations from parents and the collection of funds is indirectly channelled through parents' associations.³

Parental voluntary contributions to public schools can exacerbate inequalities and increase already-existing inequities between schools. At the individual level, parental contributions represent a significant burden, may influence choice of school and failure to pay may lead to stigmatisation or exclusion.⁴ Although there are no tuition fees for public schools in Mexico, half (55%) of household educational expenditures are allocated to education services (*e.g.* fees, school materials). Moreover, unforeseen expenditures are large, which suggests that these are used to finance basic needs in schools (*e.g.* infrastructure, school materials) (Campos, Jarillo and Santibañez, 2010). Furthermore, the difference in the extent of unforeseen expenditures between public (19%) and private schools (2%) at the national level indicates the existence of important shortages and a lack of planning on the part of public schools. Unforeseen expenditures hit the poorest households particularly hard (30% of the spending among the poorest Mexican households compared to only 10% among of the richest), which may be explained because they are overrepresented in schools that face the greatest shortages.

Since 2010, School Councils of Social Participation are responsible for promoting the publication of the overall school budget and its sources of funding, including federal, local or other resources. To this end, School Councils can ask Parents' Associations about the contributions collected during the year, where their money came from and how it has been spent. In spite of this, nationwide little progress has been made in financial reporting and, in the school year 2011-12, only 0.3% of national school councils reported sufficient information to consider that basic transparency was achieved (SEP and CONAPASE, 2012).

The international context

In most OECD education systems, expenditures that are essential for running public schools are publicly financed, fees are regulated and transparent, and other education-related expenses are small compared to the total household expenditure on education. In contrast, in countries with low fiscal capacity, families contribute more to basic public education (Bray, 2007)⁵. In PISA 2009, public school principals⁶ reported that, on average across OECD countries, 89% of total school funding for a typical school year comes from government sources (including departments, local, regional, state and national authorities); 7% from parents, in student fees or school charges paid by parents; 1% from donations (benefactors, bequests, sponsorships, and parent fundraising); and 2% from other sources (see Figure 2.3). However, in Mexico, the typical student attends a public school where only 49% of school funding comes from government sources, while over 41% of school funding comes from parents, 6% from donations, and 4% from other sources (OECD, 2012b). While the significance of parental contributions is partly explained by the large amount of in-kind provision of resources to schools in Mexico, the aggregate significance of school fees indicates that when public resources are insufficient parental contributions play an important role in financing schools.

Figure 5.3. Parents contribute to a large extent of the total funding of public schools

Note: Non OECD member economies are included for comparison.

Source: OECD (2012b), *Public and Private Schools: How Management and Funding Relate to their Socio-economic Profile*, PISA, OECD Publishing.

StatLink  <http://dx.doi.org/10.1787/888932830331>

Strategies for action

2A. Prioritise public funding on the basis of the urgency of the infrastructure required and local capacity to fundraise

Prioritising infrastructure funding for schools that do not meet a minimal standard for learning or that do not have the resources available to undertake the work required would yield higher returns to the investment. To this end, the state should continue the efforts to introduce need criteria in funding, by using accurate measures and weighting them appropriately. Moreover, the state can envisage a more active role in identifying and supporting the schools that need infrastructure improvement.

Revise the criteria for priority funding

A first step could consist of revising the criteria for priority funding in order to identify the schools that are most in need. The new criteria should ensure funding of schools which are in such a poor condition that they do not meet minimum standards (see Recommendation 3A) but have future potential (*i.e.* productive life of the building, educational needs, large current or future student community). This would help indicate which investments will be worthwhile. While Puebla is already considering the student-to-classroom ratio to prioritise funds, this indicator only reflects current needs and other measures should be considered. In Portugal, for example, the selection of schools that

were included in the School Modernisation Programme was based on a comprehensive survey of the condition and potential of the stock (Blyth *et al*, 2012b).

On the other hand, more accurate *equity criteria* should also be introduced in the prioritisation. When public resources are very limited, such as in the case of infrastructure, it is essential to prioritise public funding to disadvantaged school communities that would not otherwise have access to infrastructure improvements. While Puebla already considers the level of poverty of municipalities, more accurate measures and at a lower scale (school or student-based) would provide a better indication of disadvantage.

Revise the Peso-a-Peso programme and other funding mechanisms

A second natural step would be to introduce these measures of need into all infrastructure funding arrangements and weight them appropriately to reflect the prioritisation. In particular, the state's *Peso-a-Peso* programme could be altered so that it is funded on the basis of the fiscal capacity of municipalities rather than according to a 50:50 matching-fund formula. Since the fiscal capacity of municipalities differs, treating them on an equal rather than equitable basis hampers the opportunities of low-income localities. Under the current funding system, poorer municipalities are less likely to receive funds than wealthier ones. One option to rectify this situation is to scale municipal contributions from zero or very low levels to high or fully funded. A further option that would combine both efficiency and equity is a scaled contribution on the basis of fiscal capacity with consideration of whether a minimal standard and potential is met as a cut-off or scale.

In the longer term, the state should develop the capacity to take a more proactive role in evaluating schools needs and supporting them. A more strategic approach to funding infrastructure within the long-term plan will increase both efficiency and equity in the allocation of resources. The system currently seems to respond reactively and the demand-driven funding proposals reinforce inequities as disadvantaged schools may have more difficulty in applying for funds and the existing structures of school support are often weak. One option could be to further exploit the Puebla's education management information system for identifying those schools that are most in need of financial support for meeting the minimum infrastructure standards. Another complementary option, could be to improve reporting from supervisors, which have a range of schools under their supervision, or the specific group of the overarching infrastructure body that performs on-site visits to ensure enforcement of building codes and standards (see Recommendation 1A and Recommendations in Chapter 2).

2B. Increase transparency around parental contributions and limit its impact on equity

More information both on the extent of the contributions and how the money is spent would facilitate more informed planning, a more efficient and equitable allocation of resources, accountability and will enable the state to develop and implement policy measures to limit the negative effects on equity.

Limit its impact on equity

Puebla should be explored to ensure that parental contributions do not limit a child's educational opportunities. For example, the state could consider the following options:

- *Carry out research into school choice mechanisms* to find out whether parents' contributions to public schools deter poor parents from attending them and whether schools refuse a student if his/her family is unable to pay the parents' contribution. Research into school choice should enable the state to explore the impact of parents' contributions and design policies to put poor families in an equal footing to choose public schools.
- *Prevent stigmatisation* by ensuring that the names of those who have not contributed are not made public. Moreover, alternative arrangements such as in-kind contributions (i.e cleaning, painting, small repairs) could be considered.
- *Regulate parents' contributions*, link them to family income or provide scholarships to help the poorest families meet education costs, including parents' contributions. Indeed, the national parents' association has recently proposed the creation of a scholarship system. Another option could be to provide tax exemptions for donations to disadvantaged schools.
- *Provide more funding to schools with a higher number of disadvantaged students*. In addition to prioritising the amounts budgeted for infrastructure, the overall allocation of funding to schools could take greater account of the level of disadvantage. In the Netherlands, parental voluntary contributions are the norm but funding to schools varies according to the students' level of disadvantage, Chile has also recently introduced more funding for disadvantaged students and Australia has taken steps in this direction (OECD, 2012b; OECD, 2012c).

More transparency

More transparency around parents' contributions will also be beneficial for at least four reasons. First, it will provide a closer estimate to expenditure needs at the aggregate level and it will enable families to understand what improvements have already been made and identify future needs at the school level. Second, it will provide evidence on the efficiency and equity in the allocation of resources and, therefore, it will enable education authorities to take these into account in their policy decisions. Third, publication will facilitate accountability: accurate, timely and broad dissemination of the parents' associations financial statements and financial management reports will enable education authorities and parents to hold these associations accountable. Finally, more transparency will normalise a widespread phenomenon and, thus it will facilitate the implementation of policy measures to redress its potential negative consequences.

To increase transparency, the state of Puebla should continue promoting the role of School Councils of Social Participation in reporting the overall budget of the school. The recent federal law is an important step forward as it allows School Councils to ask parents' associations about contributions collected during the year (federal, state, municipality, parent or other), the source of those contributions and how they are spent. Although Puebla is one of the states with the most active school councils, very few reported in 2011/12 and incentives or prescriptive elements could be introduced. In addition, parents' associations should be encouraged to play a proactive role in disclosing this information. To avoid overlapping and potential conflicts between Parents Associations and the Councils tasks and responsibilities should clearly be defined and discussed at the federal, state, municipal and school levels.

2C. Define capital expenditure needs and explore ways to increase the resources available

Addressing chronic underinvestment in infrastructure requires a plan for capital expenditure that estimates the amount of expenditure needed and identifies the financial sources to meet this need. The capital plan should be integral to Puebla's long-term infrastructure plan (see Recommendation 1B), should guide funding prioritisation and should increase transparency and accountability on expenditure.⁷ It should give a medium-term perspective to provide sufficient time for larger projects to be completed but be flexible enough to be updated in light of changing contexts and needs. School boards in Alberta (Canada), for example, set three-year plans that are updated annually. Expenditure planning can also be carried out at the municipal or school level in order to increase responsibility and accountability for the development of educational infrastructure.⁸

A core element of a capital plan is an estimate of the costs of the overall infrastructure needs. The capital plan should be developed in parallel and on the basis of the long-term plan to assess the different alternatives. Cost calculations should take a full life-cycle approach to school buildings and consider operating and maintenance costs. Enhancing access to education by building as many as possible classrooms at the lowest possible unit cost may not be efficient in the long-run. For example, the Secondary School Modernisation Programme of Portugal considered maintenance crucial for the sustainability of the system and 10-year contracts have been established for prevention, corrective, functional and high maintenance. Similarly, in the United States, some states (Massachusetts, Ohio) have set funding levels for maintenance as a requirement in districts' operational budgets, and funding for capital improvements may be withheld in case of non-compliance. Moreover, the additional financial burden that come from donations need to be considered, particularly in the case of *Bachilleratos Generales*.

A second essential element of the capital plan is the identification of the financial sources to cover the costs. Since current expenditure levels are very low and substantial investments are required to address the chronic underinvestment, the state should explore ways to commit more spending for infrastructure. More efficiency in tax collection and public spending could free up resources for increasing expenditures on education infrastructure (OECD, 2011b). In addition, the state could explore options to leverage private funding from enterprises, civil associations and individuals. Tax breaks can provide an incentive for donations from the private sector. Considering that local financing can result in greater inequities, donations could be distributed according to the prioritisation criteria. In the case of vocational upper secondary education, the rationale for private sector involvement is even greater and cost-sharing arrangements should be fostered. Private enterprises can support schools with adequate equipment and also offer apprenticeships to students (see Recommendation 2 in Chapter 4).

Recommendation 3: Ensure that the existing or new school infrastructure fosters learning

The Puebla context

School buildings often do not reflect the function and importance of schools. In Puebla, many schools look similar as the design and construction often follow standardised models. The quality of the physical environment falls short of international

standards and is not fit for learning purposes in general, although this varies significantly across schools. School layouts are commonly organised according to a teacher-centric learning model where the classroom is the main spatial unit of the school. Complementary learning spaces allowing other pedagogical practices and learning models are absent as it is not easy to reconfigure classrooms. However, in recent years, the INIFED began to amend the standards for construction and school furniture to include the use of local materials and a more adequate design of tables and chairs.

Classrooms in many schools are overcrowded and there is little room for group work. Indeed, some of the classrooms visited during the study in Puebla had up to 50 students in spaces that would be more appropriate for 30 students, and use furniture that is difficult to rearrange. This means that teachers are unable to easily alter the configuration of students' desks and chairs in the classroom. In addition, many schools lack basic facilities, such as laboratories, libraries or sports areas, and some also lack basic services: 18.5% of the public schools do not have toilet facilities, 28.2% have no electricity, and 27.8% have no running water (Proyecto Educativo, 2012).

The upper secondary school system in Puebla is more complex, with different types of schools aiming to satisfy different needs and therefore different infrastructure requirements. The case of *Bachilleratos Generales* is of particular concern, both as regards to the structural condition of buildings as well as their services. About two-thirds occupy donated space and many of these schools lack facilities such as libraries, laboratories and computers (Proyecto Educativo, 2012). Other upper secondary schools that are training people to enter the job market are confronted with the challenge of being unable to provide their students with vocational workshops that meet industry standards.

The space where learning takes place is generally limited to the classroom as there is little use of external spaces and little sharing of facilities between schools or other organisations. There is little evidence that external spaces are formally used for educational purposes, whether these spaces are within or outside the school premises. This may be because of concerns about supervision and safety, especially when students leave the school premises, in addition to such practical aspects as the lack of shaded outdoor spaces in which students can work individually or in groups for any length of time. Many teachers may also lack the pedagogic skills needed to conduct effective learning activities out of their classroom. Sharing facilities among schools or other organisations is not common, even though this could be beneficial. The *Centros Escolares*, however, group all levels of education at one site and, therefore, share facilities, such as sports grounds.

Acknowledging the opportunities that new technologies can bring about, the state has made great efforts to increase the number of computers available in schools, expand connectivity and train teachers to use ICTs. The programme *Habilidades Digitales para Todos* (Digital Skills for All, HDT) has channelled both equipment and training to 36% (686) of lower secondary schools in Puebla (Proyecto Educativo, 2012). To capitalise on these efforts and enhance access to upper secondary education, a digital modality has been introduced, particularly in remote areas. It consists of using ICTs extensively in the classroom (*i.e.* Internet connection, laptops per each student, digital learning materials) at a lower cost as facilities are shared with existing schools. However, only half (51%) of primary schools in Puebla were equipped with a computer in 2010, which is similar to the national average (49%), and coverage varies significantly across school types⁹ (INEE, 2012). Moreover, ICT tends to be confined to one or two “computing” classrooms where

40 or 50 computers would be available for use for lessons in computing, rather than being available throughout the school and integrated into everyday learning activities.

Broadband connectivity has greatly improved across the state, from 20% in 2010 to 70% of the territory in 2012, covering 140 municipalities where more than 85% of the students are located. Yet, there are still difficulties in the remote regions where location and geography often make connectivity difficult to achieve; yet these are precisely the areas where access is crucial for bringing education to those students whose participation in education is constrained by travel costs, time lost in travel, and motivation.

The international context

Research increasingly shows that the quality of the learning environment has an impact on student learning and well-being, particularly in extremes of environmental elements. Poorly designed and maintained schools (*i.e.* those with inadequate acoustics, temperature, light and air quality), often found where educational achievement is low, can have a detrimental effect on teacher and student engagement and adversely affect student outcomes and can pose risks to student and staff health and safety (Higgins *et al.*, 2005; Rudd *et al.* 2008; Schneider, 2002; State of Victoria, 2011). However, the impact of school environments is less clear-cut above minimum standards (Higgins *et al.*, 2005). Yet, studies show that high-quality school facilities have a measurable impact on student learning and attendance rates (OECD, 2011c) and a positive impact on teacher motivation and engagement (2012c).

A growing trend across OECD countries is to call into question conventional approaches to designing schools and normative construction guidance and take greater account of learning needs (OECD, 2011a). Schools need to be able to prepare students for the economic and social uncertainty resulting from globalisation and post-industrialisation, and should be designed to foster adaptability, creativity, collaboration and responsiveness (OECD, 2011a).

New approaches to pedagogy, new technologies, and community engagement require the reconfiguration of school buildings. For example, education models that call for multi-age groupings, team-teaching, project areas, and vocational training and community use require more flexible spaces and up-to-day technology. But building better classrooms or bringing more ICT won't make a difference to learning until teachers learn how to use these new spaces.¹⁰

Strategies for action

3A. Take into account user needs, and ensure that standards define minimum quality and envision innovative learning environments

To increase the suitability for learning of schools, the body with the overall responsibility for delivering school buildings (see Recommendation 1A), or CAPCEE in its absence due to its involvement in technical matters, should ensure that user needs are taken into account. Engaging with supervisors, school leaders and staff, students and parents to envision the infrastructure is key to effective learning environments (OECD, 2000; Dumont, Istance and Benavides, 2010). The physical infrastructure should be responsive to their changing needs and should be designed in a collaborative process (OECD, 2011a).

The procedure for school construction could be revised in order to identify key stages where users should be involved in order to ensure fitness-for-purpose. In many cases, users are those who know best what their needs are and they should provide sufficient detail about the educational specifications (e.g. type and level of education, enrolment, teaching methods, staff and management, supplementary activities and services to the community). Once the buildings are constructed, non-responsive constructions will restrict teaching and learning practices and re-shaping it to users' needs will be costly.

In addition, standards could be revised to ensure that there is at least a minimum quality for learning given the critical effect of a very deficient environment on learning. Standards define learning environments by establishing the size, suggested layout and shapes of spaces, the configuration of furniture, sanitation systems, and materials to be used. Standards could, for example, require classrooms with greater square metre per student to address concerns about lack of space. The OECD Framework for Evaluating Quality in Educational Spaces provides a useful basis for considering the learning environment holistically (see Box 5.3). Standards should be regularly updated and should be accompanied with measures to ensuring that these are met in all schools (see Recommendation 1A).

In the longer term and considering the depth of changes required, Puebla could develop a coherent vision of the type of school that will be relevant in the future, an innovative place that propels young people into the knowledge society. Puebla could partner with local universities, *Normales*, other research institutions and/or school leaders and supervisors to determine how well the physical environment supports the needs of learning and to explore design and technical innovations and best practice. National and international research on the developments in school design can also provide relevant examples, such as information from the project Innovative Learning Environments (OECD, *forthcoming*), the compendium of exemplary educational facilities (OECD, 2011a) and the regularly updated database on best practices (OECD, 2012d) from the OECD (see Annex 5.A1).

Box 5.3. A framework for Evaluating Quality in Educational Spaces

The OECD Framework on Evaluating Quality in Educational Spaces identifies a range of quality principles against which an educational facility can be assessed:

1) The space is fit for purpose for users: the space is accessible for all young people and adults, particularly students with special needs. There are sufficient spaces in which students learn to adequately support the current and projected student enrolment. Learning spaces (e.g. classroom, library, laboratory, workshop, sports grounds) are agile, accommodating a range of educational programmes and pedagogies; multi-purpose; age-appropriate; of sufficient size to allow students and teachers to work, move around in the classroom and work with others; and have sufficient storage capacity to support the spaces in which student learn. The spaces are comfortable, with quality furniture and lighting; level of internal and external noise; levels of maintenance; and temperature and humidity control in the space do not hinder the learning process. The space can host new technologies and provides a variety of indoor and outdoor social spaces. Also, the space makes adequate provision for workspace for teachers and school administration. The space is accessible to the community for use during or after-school hours, and monitored to ensure the safety and security of staff and students.

Box 5.3. A framework for Evaluating Quality in Educational Spaces (continued)

2) *The space is symbolic, visually pleasing and offers learning opportunities:* displays unique character and meaning to the school and its occupants (*i.e.* local architectural styles, innovative design solutions or incorporation of new technologies), it has an aesthetic appeal and constitutes an educational resource.

3) *The space's operational layout is fit for purpose:* the initial construction cost for a school and the life cycle costs for capital improvements and maintenance are cost-effective, the space is effectively and holistically managed and operated, and there are feedback loops and there is a competitive design selection process, involving users.

4) *The space provides a healthy and safe environment:* drinkable water is available to staff and students in an adequate number of locations, the space has clean and functioning toilets available in sufficient number and locations, the space has a functional fire alarm and emergency lighting system, and the structural design, building system, material and condition does not present a health or safety hazard to its occupants. There are vehicle pick-up and drop-off zones, parking and pedestrian paths provide safe traffic patterns.

5) *The space is environmentally sustainable:* the space demonstrates environmentally responsible site planning, effective and efficient use of water, energy, recycling, waste management and daylight, use of sustainable construction methods and building materials.

Source : Adapted from OECD (2008), *Revised CELE Organising framework on evaluating quality in educational spaces*, OECD, Paris.

3B. Support schools in developing master plans and facilitate their implementation

Each school should be encouraged and helped to develop its own master plan in alignment with state's long-term plan (see Recommendation 1B), since schools play an important role in infrastructure and users are best qualified to determine their own needs. School master plans will facilitate better planning in the longer term and better use of school resources.

School leaders could take the lead in the development of master plans as they can gather most actors with a say in school development (*i.e.* school councils, school staff, parents, community members, local authorities and others). The plan should cover a period of several years and it should become a central planning tool rather than an additional bureaucratic requirement. It should examine the needs (*i.e.*, rehabilitation, remodelling, furnishing and equipping existing or new spaces), explore how existing buildings can be used in different ways and identify funding sources ahead of time. In New Zealand, schools are required to draft ten-years master plans to plan ahead and facilitate prioritisation (see Box 5.4).

Box 5.4. Modernising the school property portfolio in New Zealand

In New Zealand, schools are managed by boards of trustees, which are required to have a 10 Year Property Plan setting out how they will maintain and modernise their school buildings. A significant number of New Zealand school buildings were constructed between 1950 and 1980. The government's aim is to ensure that these buildings are progressively modernised and remain fit for purpose and focus on creating modern learning environments (MLEs). To this end, schools are now required to undertake a building condition assessment and an MLE Assessment once every five years as part of the 10 Year Property Plan process. The assessment is designed to be completed by anyone within a school, including the principal, board members, or teachers and students and to constitute a discussion tool on their learning environment. The MLE assessment identifies three levels of standards (core, moderate, and advanced) and the intention is to oblige all schools to work towards meeting at least the core standard.

Funding is provided via five-yearly agreements which enable them to undertake projects set out in their ten-year plans. Schools will have to focus their funding on three priority areas: i) urgent health and safety projects – for example to repair things that could harm people; ii) essential infrastructure upgrading – these are larger projects essential for running the school such as re-roofing; and iii) creating modern learning environments – includes upgrading existing classrooms to meet current acoustic and lighting requirements, or creating new types of spaces such as breakout spaces.

Source : OECD (2010b), New Zealand: Modernising the school property portfolio, CELE Exchange July 2010, OECD, Paris.

Under the leadership of the central body for school infrastructure, the state can also provide support (capacity building, technical and/or financial) to schools and communities in the planning and implementation of their master plans. Master plans should be aligned with the long-term infrastructure plan of the state. Indeed, the development of school master plans should be in close conjunction with a better use of spaces (see Recommendation 3C) and school plans may require targeted feasibility studies to unlock the potential of schools.

School infrastructure and school master plans would need to be taken into account in current and new school evaluation frameworks. As school evaluation scheme moves on (See Recommendation 4B in Chapter 2), school leadership teams would need to be better prepared to develop school master plans and managing school maintenance.

3C. Promote better use of internal and external learning spaces, encourage sharing of facilities, and create specialised learning centres

Learning spaces and facilities can be used in a variety of ways to support teaching and learning, provided that users – teachers and students – are aware of ways to make the most of them in order to create more opportunities for learning. For example, external “learning spaces” offer much potential as they can be used as adjoining spaces to classrooms, such as for biology lessons or where students can work in groups. This may require new pedagogical approaches as well as practical improvements to infrastructure, such as shaded areas or shelters.

A more efficient use of the existing facilities

Puebla should consider changing the criteria considered in procurement procedures to reflect modern views in the design of internal and external spaces and materials. For example, the potential of the furniture to be used in different settings (e.g. traditional classroom, cooperative learning) should also be taken into account and, therefore criteria on the ease of re-arrangement introduced. Also, Puebla could facilitate the acquisition of complementary goods and services that may be necessary to make a better use of the existing spaces and resources. For example, schools may require shelters to create shadowed areas, and thereby enable a greater use of external spaces. Annex 5.A1.2 provides examples on how to unlock the potential of internal and external spaces.

The state could map out the existing facilities (e.g. sport grounds, specialised facilities) and establish mechanisms and incentives for sharing them between schools and other organisations in close geographic proximity, which will promote a more efficient use of resources but is particularly important when schools lack basic facilities. A first step could be to identify local or regional institutions, such as museums, universities, science centres or eco/nature parks that could provide access to equipment that schools themselves may not be able to afford. Moreover, nearby schools can also enhance school facilities when they are planned more rationally.

A second step could consist of finding ways to encourage partnerships and adapt these sites to turn them into specialised learning centres. Indeed, the educational programme of Puebla's planetarium can serve as a good example of fostering learning outside schools (see Box 5.5). In Lund, Sweden, the University of Lund constructed a science centre that students from primary and secondary schools can visit in class groups. Undergraduate science students work with class teachers using interactive equipment. Moreover, in some cases, partnerships with the private sector can facilitate access to specific resources (see Recommendation 3B in Chapter 4).

Box 5.5. Awakening the scientific spirit of students in Puebla

To promote scientific values in children and youth, the Council for Science and Technology created an educational strategy programme directed at public schools in Puebla, which began with regular visits for students to Puebla's Planetarium throughout the year. The Planetarium offers students activities and introductory courses to foster their scientific and technological skills. Students can participate in a variety of activities regardless of their prior scientific knowledge. In two years of operation, the hallmark education programme at the Planetarium features the first Mexican astronaut, Dr. Rodolfo Neri Vela, and aims at presenting science in a different way and encouraging students to consider it in their future educational careers.

The accomplishments have been outstanding. In 2012 only, 22 298 students visited the Planetarium and from April to November 2012, there were visits from 156 schools, (comprising a total of 10 864 students) from the city of Puebla and other municipalities visited. These visits were arranged by the regional basic education offices (CORDES). Given the positive outcomes, the Planetarium has established additional agreements with other educational institutions to expand its impact.

Source : Personal communication with the State Council for Science and Technology (November, 2012).

Learning how to use them

Using learning spaces effectively requires major changes in attitudes and acquiring the necessary skills. Replacing the hierarchical teacher-learner relationship with one that is more student-centred is a challenge for many teachers – and students. On the one hand, specific training should be introduced in initial teacher and school leaders preparation to ensure that they are ready for ‘innovative’ or ‘creative’ uses of the physical environment inside and outside of the school building, in support of effective teaching and learning (see Recommendation 2D in Chapter 3). On the other hand, for teachers and school principals continuous education training sessions could be offered to empower them to make the most of school infrastructure (see Recommendation 3A and 4B in Chapter 3). This has already been the case in the introduction of ICTs through the programme HDT, which has been accompanied with specific training to enable teachers to make the most of new technologies. An alternative option with a higher potential to transform practices in schools could be to hold school-based workshops, in which teachers and school principals were guided on how to make the most of their school internal and external facilities. While specialist facilitators could carry out these workshops, supervisors could also play this role and, should also be trained in how to support teachers and school principals (see Recommendation 3A and 4B in Chapter 3).

The state body on school infrastructure could also foster and facilitate knowledge-sharing among schools. Schools should be encouraged to exchange information on the design, construction and use of school buildings and on good practices. For example, schools could collaborate through usual channels (*i.e.* educational leaders, fostering school networks) or their experiences could be compiled in a database.

Notes

1. Murillo and Roman’s study on 15 Latin American countries found that, with the exception of Cuba, basic infrastructure and services (water, electricity, sewage), didactic facilities (sport facilities, laboratories, libraries) and the number of books in libraries and computers in the school affects student performance. This finding holds even after controlling for the family’s socio-economic and cultural characteristics, the socio-economic characteristics of the area and the country’s level of development (Murillo and Roman, 2011).
2. When considering conversions it should be taken into account that ensuring compliance with legislation as well as with environmental and structural concerns can add significant costs to a project and become a real impediment to reuse (OECD, 2011a).
3. Parents’ associations can suggest and promote, in co-ordination with school principals and authorities, the actions and works necessary to improve schools, and they can also collect funds from their members. In buildings with a double shift, conflicts may arise when the parents’ association of one school decides to upgrade part of the facility while the parents’ association of the other school does not.

4. About 6% of household expenditures are allocated to education, while this amounts to 15% in private schools (*Encuesta Nacional de Ingreso y Gasto de los Hogares*, ENIGH 2008) (Campos, Jarillo and Santibañez, 2010). However, 55% of the expenditures on education of households in which students attend public schools are allocated to education services, which includes fees and school materials (e.g. notebooks, pencils) compared to 84% in fee-based private schools. Unforeseen expenditures are regressive but also due to its unforeseen nature represent an additional burden to poor families that have to reallocate resources from other basic needs. Unforeseen expenditures account to 21% of household expenditures in rural areas (less than 2 500 inhabitants) while 15% in urban areas (100 000 and more inhabitants).
5. A survey of 92 countries indicated that school fees accounts to 20% of households' expenses on education and this percentage is higher in countries where the proportion of poor households is greater (Bentaouet and Burnett, 2004).
6. School principals in schools that are directly or indirectly managed by a public education authority, government agency, or governing board appointed by government or elected by public franchise. In Mexico, 88.5% of students attended public schools in 2009 (OECD, 2012b).
7. While the plan should primarily fit into the educational strategy of the State, it can also be feed an overall infrastructure plan. It should fit into the capital expenditure plan of the State. For example, Scotland's infrastructure plan covers all areas including housing, health, communications as well as education and so on.
8. For example, in the province of Alberta (Canada) and in Scotland, detailed capital expenditure plans are produced by school boards and local education authorities respectively.
9. In general schools (57%), indigenous schools (44%) and communitarian (2%) (INEE, 2012).
10. An example of an innovative experience was the School Construction Systems Development project (SCSD) experimented in the 1960s in the United States. It was a practical way to test methods for building better schools rapidly and economically. These schools provided large open spaces that could be subdivided by sliding elements into flexible inside spaces that allowed teachers to quickly rearrange the learning environment according to different group sizes. However, staff had not been adequately trained to teach in these spaces and, since they were rarely involved in the planning process, they did not feel much incentive to live up to a concept that might have been promising in theory but did not perform in everyday life (OECD, 2011a).

Annex 5.A1. Innovative learning environments

Box 5.A1.1. Fostering innovative learning environments

Yuille Park P-8 Community College in **Victoria (Australia)** is located in an area of high disadvantage that has been going through a neighbourhood renewal project since 2001. The school is unique as it is the centre of a Community Hub offering opportunities and facilities for the wider community. Another innovative aspect is the attempt to flatten staffing structures. The school is an example of where a strong vision comes together in the school buildings and layout and this vision is lived out in the pedagogical and social approaches of the staff to students.

The Community Learning Campus (CLC) in **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 focuses on providing an active, constructive, and holistic educational environment that brings together high school and post-secondary education in one place (which may be virtual), seeking to create a seamless transition for students wishing to enter the workforce, apprenticeship, college, or university.

The Dobbantó (Springboard) Programme in **Hungary** is an innovative full-time compensatory programme that takes place within regular vocational schools and prepares learners with unsuccessful school careers for a return to schooling or professional life. The key element is a complex support system. Learners work in well-equipped, newly renovated classrooms, which position the classes in the eyes of all learners of the school not as catch-up classes but as classes that receive special attention.

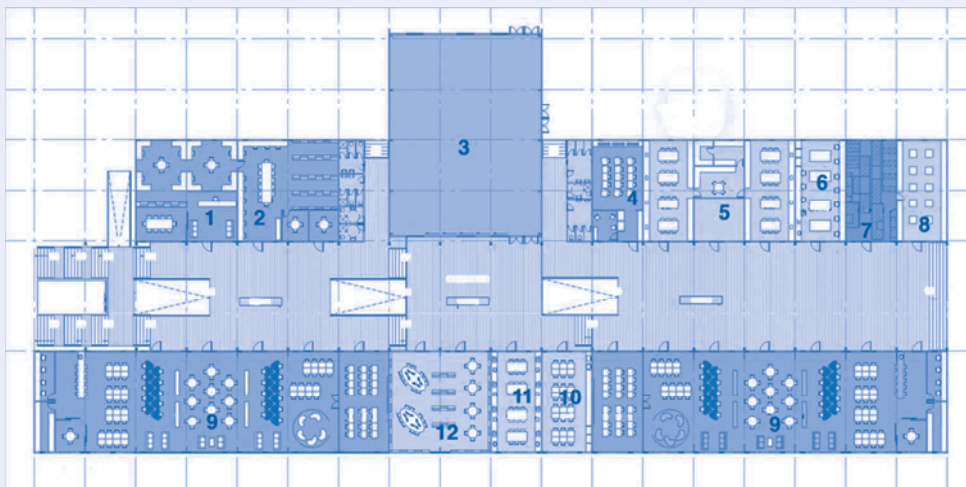
The one-room rural school of **Lindenthal (Switzerland)** has one mixed-age class with students from grade 1 to 9. The children do not follow the programme of a certain grade, instead learning activities inspired by Pestalozzi pedagogy are flexibly adapted to their current level of development, allowing the challenging of gifted students as well as the fostering of self-confidence of weaker students. Few disciplinary problems exist which the school attributes to individualized education and the social dynamics of a classroom in which younger students learn from their older classmates.

The definition of the learning environment in the Fiskars Model in **Finland** encompasses the whole village community in which the small primary school is situated (students aged 6 to 12). Main pedagogical methods are learning-by-doing and active learning in authentic “real life” contexts. Positive effects of the collaboration between school and village are that community members are aware of the whereabouts of the children, that generations are connected, and that students learn about the historical and cultural heritage of the village.

Source : OECD (forthcoming), *The Nature of Learning Volume 2: Innovative Cases (Working Title)*, OECD, Paris.

Box 5.A1.2. Albany Senior High School in Auckland (New Zealand)

This was the temporarily constructed building while the school was being built. It provided the school with the opportunity to test its ideas for student centred learning and show how it could be delivered and supported by interdisciplinary teaching teams. The focus of the ethos is that learning and teaching should be public activities and not shut away in closed spaces. The aim was to design an open environment where learning could happen everywhere. To support a learning community, they built the school around learning commons that are large open-plan spaces that can accommodate up to five classes of students. The spaces have a large teaching space surrounded by smaller spaces for group work. Having very large open teaching spaces with attached break-out rooms helped to foster the enquiry-based learning community the school wanted for its students.



Key: 1 Administration; 2 Resource centre and staff lounge; 3 Gymnasium; 4 Music; 5 Science; 6 Soft technology; 7 Workshop; 8 Hard technology; 9 Learning commons; 10 Food technology; 11 Art; 12 Library; 13 Concourse

Source: OECD (2011a), *Designing for Education: Compendium of Exemplary Educational Facilities 2011*, OECD, Publishing, <http://dx.doi.org/10.1787/9789264112308-en>.

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Annex A. Review visit programme

4 - 12 September 2012

Tuesday, 4 September 2012, Puebla de Zaragoza

09:00 - 09:50	Meeting with the Puebla co-ordination team – Francisco Figueroa – Jorge Cruz – Alfonso Galindo – Máximo Romero – Fausto Alzati – Raúl Gómez – Patricia Vázquez – José Manuel Suárez – Godofredo González
10:00 - 11:30	Meeting with Undersecretaries of: – Basic Education: Víctor Manuel Barceló Rodríguez – Upper Secondary: Jorge Benito Cruz Bermudez – Higher Education: María del Carmen Salvatori Bronca – Liaison Unit for Coordination and Educational Strengthening: María Edith Bernáldez Reyes
11:30 -12:20	Meeting with the Director General of School Operations – Rossana Stella Podesta Siri
12:20 - 13:10	Meeting with the Director General of Teacher training – Dulce María Flores Beltrán
14:15 - 15:05	Meeting with the Undersecretary for Upper Secondary Education – Jorge B. Cruz Bermúdez – Antonio Argüelles – Bernardo Naranjo and team
15:15 - 16:05	Meeting with Specialists in Demography and Educational Demand, particularly on Upper Secondary Education – Luis Fernando Graham, Technical Secretary of the National Population Council

16:15 - 17:05	Meeting with the Undersecretary of Planning, Evaluation and Innovation – Francisco Figueroa Souquet and team
17:15 - 18:00	Meeting with Responsible for OSFAE Delegates SMS – Ezequiel Flores Darán Torres Arpi – Marco Antonio del Castillo

Wednesday, 5 September 2012, Puebla de Zaragoza

08:15 - 09:25	Meeting with SNTE Section 23 and Section 51 – Cirilo Salas Hernández
09:30 - 11:00	Meeting with the Director General of Teacher Training and Development – Víctor Hugo Calvillo Mendoza Director General of Modernisation, Training and Professional Development: – David Rendón Bustillos Director of Teacher Career – Francisco García Mercado
11:00 - 11:50	Meeting with Committee of the Puebla Administrator for the Construction of Education Spaces (CAPCEE) – Diego Corona Cremean
13:30 - 14:30	Interview with the Secretary for Public Education – Luis Maldonado Venegas
15:10-18:00	Interviews with (pre-school and primary levels)
	Director General and Directors of Pre-school and Primary Group of teachers Group of students Group of parents Supervisor of the Centro Escolar

Thursday, 6 September 2012, Zacatlán

09:00 – 13:10.	Visit to an Indigenous primary school
	Interviews with the Director, Teachers, Parents, Students, a Supervisor
11:50 – 13:10	Visit to a Telesecundaria
	Interview with the Director, Teachers, Parents, Students, a Supervisor
14:15 – 15:30	Visit to Teaching Training College Normal “Lic. Benito Juárez” Director General and Directors for Licenciaturas Director General , for Undergraduate Studies – Luis Rodolfo Hernández Hernandez, – Rosa Hernández Lecona, – Lucila Barrera Ruiz – Juan José Lecona González Students Teachers
15:40 - 16:30	Visit to a Digital Upper Secondary School “Gerardo Dumagk” – David Bernardo Becerra Reyes
16:30 - 17:20	Interview with a teacher trainer, former director of the School Center, former director of the School Center of Zacatlán, and member of the Parliament of Puebla for Zacatlán – Dip. Jorge Luis Coriche Avilés

Friday, 7 September 2012, Puebla de Zaragoza

09:00 - 18:00	Group Interviews
Group 1. Basic Education	
09:00 - 10:00	Interview with 4 directors of teacher training institutions (2 public and 2 private) Escuela Normal Oficial “Luis Casarrubias Ibarra” – Mtro. José Luis Aguilar Vergara. Instituto Jaime Torres Bodet (Normal Pública) – Mtro. Neftalí Dante Nolasco. Instituto Normal Particular “México”. – Mtra. María Teresa De Jesús Forcelledo Colombes. Colegio Particular “Miguel Hidalgo”. – Mtra. Leticia Olivares Rojas.

10:00 - 10:30	Interview with the Director General for Promotion of Equity and Social Inclusion – Bárbara Fernández
10:30 - 11:00	Interview with the regional coordinator for the Quality Schools Programme – Iris Cervantes Jaramillo
11:00 - 12:00	Interview with Supervisors: Pre-School: Rosario Santamaría Escorcia Primary: Enriqueta Gpe. Cuevas Aguilar Indigenous Primary : José Bernabe Pérez Juárez
12:00 - 13:00	Interviews with Supervisors Secondary General: Felipe de la Lanza Graciada Secondary Technical: Joel Hernández Romero Telesecundaria: Salomón Arciniega Arias Special education: Ofelia Olivia Delgado Cruz
14:00 - 15:00	Interview with the Responsible for the State Council for Social Participation Mao Américo Sáenz
15:00 - 16:00	Interview with the head of the Parents' Association Alejandro Águila Argüelles
16:00 - 17:00	Interview with the Director of the "School Centres" Ramón Iglesias
Group 2. Upper Secondary Education	
09:00 - 12:00	Interview with the Director General for Academic Affairs – José Luis Balmaseda Becerra
	Interview with the Director General for Support to Upper Secondary Education – Álvaro Álvarez Barragán
	Interview with the Director General for Academic Affairs, Director General for Support to Upper Secondary Education and their team – José Luis Balmaseda, – Álvaro Álvarez Barragán Renato León Focus group with: CONALEP Francisco de Padua Flores COBAEP José Antonio Gómez Mandujano CECYTE, Enrique Martínez DGTI and DGETA Marco Antonio del Castillo UNIDES José Ojeda Bustamente

	Head of the Private Schools Department María Eugenia de la Calleja Representatives of the BUAP Jorge Luis Lima	
12:00 - 12:40	Union representatives from SETEP, SETEPID and Colegio de Bachilleres – Abdón Claderón – Andrés López Ortiz – Ricardo Ordaz	
12:40 - 13:40	Representantes de Organismos del Sector Privado COPARMEX – Armando Tess	
15:00 -16:00	Meeting with Team of the Undersecretary for Higher Education	
16:00 -17:00	Representatives from BUAP on teachers' continuous training courses	
Group 3. Infrastructure		
09:00 - 10:00	Interview with the Director General for the Promotion of Equity and Social Participation: Bárbara Fernández	
10:00 - 11:00	Interview with supervisors of: Pre-school Rosario Santamaría Escorcía Primary Enriqueta Gpe. Cuevas Aguilar Indigenous Primary José Bernabé Pérez Juárez	
11:00 - 12:00	Interview with supervisors of: General Secondary; Felipe de la Lanza Graciada C. Technical Secondary: Joel Hernández Romero Telesecundaria Salomón Arciniega Arias Special education: Ma. Ofelia Olivia Delgado Cruz	
12:00 - 13:00	Interview with representatives from SEP-Puebla and CONALEP, COBAEP, CECYTE, DGTI, DGTA. – José Luis Balmaseda, – Álvaro Álvarez Barragán Renato León – Francisco de Padua Flores – José Antonio Gómez Mandujano – Enrique Martínez – Mario Antonio Del Castillo – José Ojeda Bustamente – María Eugenia de la Calleja – Jorge Luis Lima	
13:00 - 14:00	Interview with the Director General for Support for Upper Secondary Education Álvaro Álvarez Barragán	

14:00 - 16:00	Lunch with Head of CAPCEE Diego Corona
16:00 - 17:00	Interview with the Representative of the Parent's Association Alejandro Águila Argüelles
Groups 1, 2 and 3	
17:00 - 18:00	Interview with the Director General of Education Development Mario Cañedo Solares

Monday, 10 September 2012, Puebla de Zaragoza

08:00 - 09:15	Visit to an Upper Secondary Education Institution in Puebla: CONALEP, Interviews with Directors, teachers, students, parents and supervisors
09:30 - 10:30	Visit to an Upper Secondary institution “Guillermo Gonzales Camarena” Interviews with Director, teachers, students, parents and supervisors
11:00-13:30	Visit to the Teacher College of the city of Puebla (Benemérito Instituto Normal) Preschool and secondary education Interviews with: Directors of Preschool and secondary education Pre-school teachers Parents of pre-school children Lower secondary school teachers Parents of lower secondary school children Students of lower secondary, Supervisor of preschool and lower secondary
14:30 - 16:30	Visit to the lower secondary school “México 68”

Tuesday, 11 September 2012, Puebla de Zaragoza

09:00 -10:30	Interviews with a group of researchers and advisors – Antonio Argüelles – Bernardo Naranjo – Eduardo Andere – Tomás Miklos – Carlos Mancera – Armando Prida – Miguel Limón Rojas – *Jorge Guillén Muñoz; Rector UTP
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10:30 -11:30	Interview with the Director of Education Policy – Gema Ramírez Vázquez
11:30 - 12:30	Interview with the Secretary of the Treasury: Angel Roberto Ceballos and the Director General of Programming and Budget: Manuel Suárez Ríos
12:30 - 13:30	Meeting with the Puebla Council for Education – Alfonso Galindo and team
14:30 -16:00	Meeting with the coordination team – Francisco Figueroa – Máximo Romero – Patricia Vázquez – José Manuel Suárez – Raúl Gómez – Godofredo González

Wednesday, 12 September 2012, Mexico City

11:00 - 12:00	Interview with the Director General for in-service Teacher training – Mtro. Víctor Mario Gamiño Casillas.	
12:00 - 13:00	Director General for Curriculum Development Nohemi García García	
13:00 - 14:00	Coordinator of Counsellors of the Undersecretary of Upper Secondary Education – Jesús Eduardo Perez – Iván Flores	
14:00 - 15:00	Director General for Educational Materials – Oscar Ponce Hernández.	
17:00 - 18:00	Head of the Planning and Evaluation Unit for Educational Policy (UPEPE) – Bernardo Rojas Nájera – Florencia Martínez Becerra	
18:00 - 20:00	Director General for Higher Education for Educational Professionals – Marcela Maldonado and team	

Annex B. Biographies of the authors

External experts

Inés Aguerrondo is an education policy specialist and consultant. Between 2008 and 2010, she was involved in the extensive work carried out under the OECD-Mexico Agreement to improve equity and quality. She has been a consultant to UNESCO in areas such as policy definition for educational reform, training of education planners and managers for Latin America, infrastructure diagnosis, systems for personnel training in education reform and assessment of the application of socio-affective methods in Latin America (1976-1991). She has also worked as a consultant to the Interamerican Development Bank in Professional Teacher's Development (in Quito) and in the Organisation of American States in education planning in Argentina, Uruguay and Peru (1976-1987). She was a member of the Argentine delegation in the negotiations with the World Bank to become a member country, a coordinator for the Argentina-World Bank Investment Project in the Education Sector, an expert in assessment studies on the process for decentralisation of primary education in Argentina (1990-1994) and Under Secretary for Educational Planning at the Argentine Ministry of Culture and Education (1993-1999).

Alastair Blyth was a Policy Analyst at the OECD Centre for Effective Learning Environments (CELE) until August 2012 and is now working as an independent consultant focused on how learning environments support the needs of learning. At CELE he led country policy reviews on national infrastructure, in addition to leading international surveys on the effects of the economic crisis on educational facilities and CELE's flagship publication *Designing for Education: Compendium of Exemplary Educational Facilities 2011*. At the International Energy Agency, Blyth managed a survey of IEA member and BRICS countries on policies, regulations, and economic incentives on energy efficiency in buildings. As a qualified architect from the UK, Blyth has worked on a range of school building projects. He is co-author of a book on *Managing the Brief for Better Design* (2nd ed), and as a consultant focused on the development of the brief for the buildings in collaboration with clients and stakeholders, and the design team. Previously he held a teaching and research post at the University of Westminster, a visiting lecturer at University College London, and visiting teaching fellow at the University of Dundee, Scotland. He has also worked as a consultant for the UK Design Council.

Isobel McGregor has 40 years of experience of working in education in Scotland and beyond as a teacher, local education adviser and education officer, and as a member of Her Majesty's Inspectorate of Education (HMIE). Isobel inspected in all sectors of education (except university), leading many tasks and specialising in quality improvement, self-evaluation, and leadership, as well as in her original field of foreign languages. She had a significant role in the development of quality indicators for

inspection and self-evaluation, both for schools and for local authorities. She undertook international work and led in the production of a key report on Scottish education (*Improving Scottish Education*, HMIE, 2006). Since 2006, Isobel has acted as an independent educational consultant in many locations including Argentina, Chile, France, Germany, Italy, Macedonia and Japan. She has been involved in reviewing education in several Districts in Connecticut and in schools in New York. She was a member of the OECD team which reviewed evaluation and assessment policies in Mexico (February 2012). Since 2009 she has worked part-time for the Standing International Conference of Inspectorates (SICI - Europe) as the co-ordinator of activities relating to SICI's Inspection Academy and leading SICI's involvement in a European Social Fund sponsored project to train education inspectors in Romania.

OECD Secretariat

Francisco Benavides is a Policy Analyst at the OECD Directorate for Education and Skills since 2004. He has led the report *Strong Performers and Successful Reformers: Lessons for Korea* and co-led and co-authored the *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*. Previously, Francisco worked on the Mexico-OECD Study analysing school management and teacher policies in 2009-2010, which resulted into *Improving Schools: Strategies for Action in Mexico* and *Teacher Evaluation and Examples of Country Practices*. Between 2006 and 2008, he was project manager of the Innovative Learning Environments and Teacher Education for Diversity projects and co-edited *The Nature of Learning: Using Research to Inspire Practice* and *Innovating to Learn, Learning to Innovate*. He has collaborated with other projects on innovation, ICTs and neurosciences. Francisco obtained a M.Sc. in Political Sciences and Development at the IEP Sciences-Po Paris and B.A. in International Relations in the Monterrey Tech – ITESM. Before working at the OECD, Francisco was a journalist and collaborated with several development and humanitarian NGOs in the Americas, Africa and Europe.

Anna Pons is a Policy Analyst in the OECD Directorate for Education and Skills. She is currently involved in the reviews of the education system of Korea and Thailand. Previously, she co-authored *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, which looks into policies to improve equity in education and reduce school failure, and an adaptation for North-American and Asian countries. Anna has also contributed to *Public and Private Schools: How management and funding relate to their socio-economic profile*, peer reviewed several publications, collaborated with the roundtables on competition policy, and co-authored the sections on public procurement and open government for *Government at a Glance 2011*. Prior to joining the OECD, Anna had worked for the Government of Catalonia, the City Council of Manresa and the private sector. Anna holds a master in Economics and Public Policy from Sciences Po, ENSAE and École Polytechnique, and bachelors in Economics and in Political and Administration Sciences from Universitat Pompeu Fabra.

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Improving Education in Mexico

A STATE-LEVEL PERSPECTIVE FROM PUEBLA

How can the state of Puebla improve its education system? Within an international perspective, this report analyses the major challenges facing the state's education system, current policy initiatives, and innovative practices. It highlights that a long-term strategy, a stronger capacity to lead improvements and reforms in four main policy areas are keystones for educational improvement. With insights from top performing systems and those with a similar reform trajectory, it sets out strategies for action to make change happen.

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- Chapter 1. Building the Puebla education model
- Chapter 2. Strengthening schools and student learning in Puebla
- Chapter 3. Improving the quality of teachers and school leaders in Puebla
- Chapter 4. Improving upper secondary education in Puebla
- Chapter 5. Improving education infrastructure in Puebla

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