



NATIONAL REVIEW ON EDUCATIONAL R&D

EXAMINERS' REPORT ON MEXICO

TABLE OF CONTENTS

FOREWORD.....	3
EXAMINER’S REPORT ON MEXICO’S EDUCATIONAL R&D SYSTEM	4
1. INTRODUCTION TO THE OECD REVIEW ON MEXICO’S EDUCATIONAL R&D	4
2. THE MEXICAN EDUCATION SYSTEM.....	6
2.1. General description of the education system.....	6
2.2. The principal challenges in the education system.....	8
2.3. The strategy for change: the agreement on decentralisation	9
2.4. The results of the decentralisation and new challenges for education policy.	11
2.5. Conclusions	14
3. EDUCATIONAL RESEARCH AND DEVELOPMENT IN MEXICO.....	16
3.1. Historical overview	16
3.2. Educational researchers.....	17
3.3. Research institutions and research communities.....	19
3.4. Relevance and quality of educational R&D	24
3.5. Dissemination of research	26
3.6. Support and financing for research	27
3.7. Impact of educational R&D	28
4. DISCUSSION OF THE CHALLENGES.....	30
4.1. The Focus of Research	30
4.2. The Capacity to Produce Research.....	30
4.3. Funding for Educational Research	31
4.4. Use of Research by Policymakers	31
4.5. Use of Research by Practitioners.....	31
5. RECOMMENDATIONS FOR MEXICO’S EDUCATIONAL R&D SYSTEM.....	32
5.1. A national research strategy	32
5.2. Enhancement of research capacity and infrastructure.....	33
5.3. Strengthen the use of educational R&D.....	34

FOREWORD

1. The Examiners' Report on Mexico is the third OECD review of a Member country's educational R&D policy. The first two reports on, respectively, New Zealand and England, were presented at the CERI Governing Board meetings in autumn 2001 and 2002. These two reviews have been published in the publication entitled "New Challenges for Educational Research" (CERI, 2003).

2. The purpose of the OECD/CERI reviews of educational R&D is to assess the extent to which the educational R&D system within a country is functioning as an effective means for creating, collating and distributing the knowledge that teachers and policy-makers can draw on. Thus, the attached examiners' report on Mexico's educational R&D can be viewed as an evaluation of the effectiveness of Mexico's educational R&D system in developing and applying useable knowledge to improve the quality of educational practice and policy.

3. The work on educational R&D reviews came out of the generic work on knowledge management with the two central publications on *Knowledge Management in the Learning Society* (CERI, 2000) and *Innovations in the Knowledge Economy: Implications for education and learning systems* (CERI, 2004). The first publication made a strong plea for creating better knowledge bases for determining educational policy and practice given that the rate, quality and success in knowledge creation, mediation and application are relatively low in the education sector compared with other sectors such as health and engineering. The latter publication discusses four types of innovation in education and other sectors. It emphasises that in order for a country to be at the learning edge of transformation, both incremental and radical innovations should be supported systematically. Furthermore, successful innovations should be transferred rapidly through a networked system, and knowledge transfer itself becomes an area for radical innovation. Finally, governments and education authorities should openly embrace evidence-informed policy and practice.

4. The Examiners' Report on Mexico's educational R&D system, as well as the Background Report prepared by COMIE (Mexican Council of Educational Research), CINESTAV, Mexico, are attached.

5. The review team was composed of Susan Fuhrman, Dean at the Graduate School of Education, University of Pennsylvania, US; F. Javier Murillo, Professor at the Faculty of Teacher Training and Education, Universidad Autónoma de Madrid, Spain; and Sergio Martinic Valencia, Professor and Coordinator of the PhD Program in Sciences of Education at Pontificia Universidad Católica of Chile. Principal Analyst Kurt Larsen, OECD/CERI assisted the review team in carrying out the review and in writing up the review report.

EXAMINER'S REPORT ON MEXICO'S EDUCATIONAL R&D SYSTEM

1. INTRODUCTION TO THE OECD REVIEW ON MEXICO'S EDUCATIONAL R&D

1. Complex societies and education systems require a sound knowledge base for practitioners and policy-makers. This is perhaps even more important in Mexico as compared with other OECD countries, as Mexico is, in many respects, in an economic “catching up” phase, where the emphasis on improving the coverage and quality of human capital is crucial for further economic and social development. The social and cultural challenges for Mexico are equally important and include the consolidation of a modern democracy and of a multicultural society with equal opportunities for the indigenous populations.

2. The purpose of this review is to assess the extent to which the educational R&D system within Mexico is functioning as an effective means for creating, collating and distributing the knowledge from which practice and policy can draw. Given the huge challenges that the Mexican education system faces (as discussed in Chapter 2), the educational R&D system can potentially play a very important role in ensuring a better knowledge base for the future decision-making in the Mexican education system. The recent OECD Economic Survey on Mexico highlights what is possibly the greatest challenge for Mexico, namely that “strengthening human capital is indeed a necessary condition for high sustained growth in the long term. Despite major improvements over the last decades, especially in increasing basic school enrolment for a rapidly growing school-age population, Mexico’s human capital lags far behind most other OECD countries” (OECD, 2003a).

3. Although spending on education in Mexico accounts for more than one fifth of total public spending (compared with 13 per cent on average for OECD countries), in proportion to the GDP it is among the lowest in the OECD area, and it is especially low when corrected to take into consideration the relatively large share of the total population taken up by the country’s youth (aged 5-29) (OECD, 2003a).

4. Mexico has made considerable improvements in raising the coverage and the quality of basic education over the last decades. As mentioned in Chapter 2, which gives a short overview of the main developments and challenges in the Mexican education system, the main focus of Mexican educational policies has very logically been to provide compulsory basic education for a young population, as part of a very important, long-term strategy for combating poverty and increasing the level of human capital. Thus compulsory basic education now covers the ages up to 14 (1 year pre-school, 6 years primary, and 3 years lower secondary education). By the year 2006, 2 years of pre-school will be compulsory, and 3 years by 2008. Currently, the main effort is, on the one hand, to increase access to pre-school and lower secondary education and, on the other hand, to improve the overall quality and relevance of compulsory basic education.

5. It is within this context that the purpose, scope and development of the Mexican educational R&D system should be understood. Most of the topics addressed by Mexican educational researchers have links, directly or indirectly, to Mexico’s need for educational development. This is the reason why much

of Mexico's educational research is not organised in academic disciplines addressing educational issues, but rather in more than thirty fields or topics that address educational development.

6. As mentioned in Chapter 3, educational R&D activity in Mexico is relatively small. There are around 500 educational researchers in Mexico, corresponding to 0.03 per cent of the 1.5 million teachers (considering teachers from pre-school to higher education). If a wider definition of educational researchers is also, for example, applied to teacher training institutions such as the National Pedagogical University, to federal and state education initiatives and to NGOs, the figure might be 5 to 10 times higher. The researchers to teachers ratio is, however, still low. In the United States and Europe, educational researchers often concentrate on teaching in post-graduate courses and on carrying out research. In Latin America, on the other hand, researchers generally perform several functions at the same time and often switch easily between research, teaching, consultancy, decision-making and direct intervention. This implies that researchers can play an important role in the transfer of knowledge in the Mexican education system, as both producers and users of educational R&D. For example, several of the key, top management positions within the Secretariat of Public Education (SEP) are occupied by former educational researchers.

7. Through the interviews we carried out, we were able to identify some major "mismatches" between the needs of Mexican policy-makers and practitioners for relevant and applicable research, on the one hand, and the educational R&D that is actually carried out, on the other. In contrast to almost every OECD country, the bulk of educational researchers in universities and research centres specialise in higher educational research instead of basic educational research. This is a paradox, given that the main focus of Mexico's education policy over the previous decades has been on improving the coverage and quality of basic education. Furthermore, there is a considerable shortage of educational researchers with sufficient quantitative skills – as in most other OECD countries – that is hampering the research into education evaluation at a critical moment: when the importance of education evaluation is growing throughout the Latin American and the Caribbean region. Finally, the links between educational research and the practitioners are in general weak, with little capacity for teachers to engage in the systematic reflection of their teaching practices and to participate in research projects with experienced researchers.

8. In Chapter 4, these "mismatches" and several other themes, such as research capacity building and research funding, will be addressed. And finally, in Chapter 5, we suggest a number of recommendations in order to strengthen the overall effectiveness of the Mexican educational R&D system for producing and applying knowledge to improve the quality of educational practice and policy. We believe that if these recommendations were implemented, a better knowledge base for improving the quality of educational practice and policy in Mexico would exist.

2. THE MEXICAN EDUCATION SYSTEM

9. Mexico has one of the largest and most complex education systems in Latin America. Some 31 million students are pursuing their studies at various levels in the system and in different forms.

10. To achieve the current coverage, the country has had to create institutional and educational alternatives to ensure access to school for the indigenous population, young people and adults studying to a higher level or training for work, and sizeable population groups living in remote regions. The country has a school-based and non school-based system and major remote learning schemes that guarantee access to a culturally diverse and geographically dispersed population. Government efforts over the last 70 years have raised the average length of schooling for the population over the age of 15 years from 1 to 7.67 years (SEP, 2001).

11. This extended coverage was accompanied by an increasingly complex system and a network of institutions. The process generated new administrative and educational problems that affected the efficiency, quality and equity of the education system. Up to the end of the 1980s, decentralising the system and improving the quality and equity of learning were among the principal objectives of educational policies. This was strengthened even further in 1992, as a framework agreement was signed committing the Federal Government, state governments and the National Union of Education Workers to a new cycle of reforms based on decentralisation and improving the efficiency, quality and relevance of the results.

12. This chapter describes the principal characteristics of the Mexican education system, the general policies that have guided the changes in the last 10 years, and the remaining educational challenges that are important issues in understanding and transforming the country's educational research and development system.

2.1. General description of the education system.

13. Mexico has three types of education, administered in four different ways.

14. The types of education are: basic education, consisting of pre-school, primary and lower secondary levels; upper secondary education, which consists of the baccalaureate and technical vocational education and, lastly, higher education at degree and post-graduate level. Throughout most of the 20th century, only primary school was compulsory. Then in 1993, lower secondary education was made compulsory and in 2002, the pre-school level. Thus compulsory basic education will, by the year 2008, cover ages 3 to 14 (3 years pre-school, 6 primary and 3 lower secondary).

15. Each of these types, in turn, has both a formal, school-based organisation and a non-school-based system. The former chiefly provides for the school age population and the second chiefly for the adult population. The non-school-based system is relatively small compared to the school-based system. It is mainly adult education, and no more than 1 million adults are registered (vs. more than 30 in the school-based system). Indigenous education and remote rural areas are, almost exclusively, part of the school-based system. The following table shows this organisation and the various components of the system.

Table 1. General Description of the Mexican Education System

Type of education	Level	School-based	Non school-based
	Initial education	Initial education	Education by parents
Basic Education	Pre-school	General	
		Community	
		Indigenous	
	Primary	General	Primary for adults
		Community	
		Indigenous	
	Lower secondary	General	Lower secondary for adults
Community			
Indigenous			
Vocational training	Training	Vocational training	
Upper secondary Education	Technical professional	Technical professional	Open and distance learning
	Baccalaureate	General	
		Technical	
Higher Education	Higher technical	Higher technical	Open and distance learning
	Bachelor's Degree	Teacher training	
		University degree	
		Technical degree	
	Post-graduate	Specialist	
		Masters degree	
Doctorate			

Source: SEP (2003:8)

16. There are four forms of administration or support for educational establishments: federal, state, private and autonomous. 71 per cent of pupils attend schools administered by state governments and only 11 per cent attend those run by the Federation. The scale of state administration is due mainly to the decentralisation of basic education and teacher training that began in 1992 (SEP, 2003). The private and autonomous forms account for 18 per cent of enrolment, primarily in the upper secondary and higher education system.

17. In the last 70 years, Mexico's education priority was to expand primary school coverage. The success of this policy led to an unprecedented increase in enrolment, reaching almost universal coverage (93.1%) in the 2002-2003 school year (SEP, 2001). Between 1970 and 2003, total enrolment in all levels of the school-based education system rose from 11.5 million students in 1970 to 30.9 million in 2002-2003 (SEP, 2003:13). In the same period, the average length of schooling rose from 3.7 to 7.8 years for men and 3.1 to 7.3 years for women¹. The following table shows the distribution of students by type of education and form of administration for the school year 2002-2003.

18. Official coverage figures of 93.1% in primary education (6 grades for children from 6 to 11 years of age) and 85.6% for lower secondary education (3 grades from 12-14 years) have been traditionally computed as gross enrolment rates that consider all children registered, and not only those in the normative

1. SEP. National Education Plan 2001-2006. Mexico, 2001:58

age group. Recent estimations of net enrolment rates by the National Institute for Educational Evaluation (Instituto Nacional para la Evaluación de la Educación, INEE), show that gross figures underestimate real enrolment rates in primary and overestimate those of lower secondary education. According to the INEE, the net enrolment rate in primary education is about 98%, but in lower secondary education it is only about 70%. These figures show that universal coverage in primary education is practically a reality, but that the attrition rate in lower secondary education is very high. In fact, coverage at 13 years is in the 80% range; at 14 years it drops to 70% or less, and at 15 it is less than 60%.

Table 2. Pupils in the School-based System by Level of Education and Form of Administration 2002-2003

	Federal		State		Private		Independent		Total	
	Thousands	Percentage	Thousands	Percentage	Thousands	Percentage	Thousands	Percentage	Thousands	Percentage
Pre-school	339	10.4	2,928	13.1	369	9.5			3,636	11.8
Primary	929	28.4	12,737	57.1	1,191	30.5			14,857	48.2
Lower secondary	407	12.4	4,804	21.5	449	11.5			5,660	18.2
Vocational training	331	10.2	392	1.8	441	11.3			1,165	3.8
Upper secondary education	911	28	1,194	5.4	711	18.2	479	34.8	3,295	10.7
Higher education	346	10.6	250	1.1	742	19	899	65.2	2,237	7.3
Total	3,263	100	22,283	100	3,903	100	1,401	100	30,850	100

Note: The left hand side of each column shows figures in thousands, the right hand side shows the percentage

Source: SEP (2003) (n=30.9 million pupils)

19. As can be seen from table 2, 78.2 per cent of the population covered by the school-based system is in basic education (pre-school, primary and lower secondary). The relative size of this level can largely be explained by the structure of the age pyramid for the population, in which 26 per cent are aged from 4 to 15 years (SEP 2003:11). Upper secondary education, on the other hand, has 10.7 per cent, higher education 7 per cent and, lastly, vocational training services cover the remaining 3.8 per cent (SEP 2003:11). At these levels, as in the pre-school level, there remain considerable problems of coverage and insufficient provision concentrated in the states with the highest poverty index.

2.2. The principal challenges in the education system

20. The increase in coverage, in a relatively short space of time, generated new challenges resulting from the changes in the education system. Up until the late 80s, educational administration was highly centralised and this, along with the inherent difficulties of regulation and coordination, was one of the factors that gave rise to poor internal efficiency and the unequal quality of educational results.

21. Indeed, despite almost 100 per cent enrolment in the first grade of primary school, many pupils, mainly children in the poorest states and the rural sector, do not complete this level in the normal time (Muñoz, 2000; ECLAC, 2002b).

22. As regards access, significant challenges persist at pre-school, secondary and higher education levels. For example, 24 per cent of children aged 5 do not attend pre-school. Only 47 per cent of young people aged from 16 to 18 are in upper secondary education and only one in five young people from 19 to 23 years are in higher education (COMIE, 2003). This inequality of access is corroborated by the huge difference across the country in average years of schooling. While in the northern states, the average length of schooling ranges from 7.7 to 8.7 years, in the southern states, the range is 5.7 to 6.7 years (SEP,

2001:59). Chiapas State, for example, came bottom for educational levels in the 2000 census. The current average (5.71 years) is lower than it was 30 years ago in the Federal District (Martínez Rizo, 2002).

23. Moreover, national evaluations carried out by the Secretariat of Public Education and international studies in which the country participated show the poor results achieved in students' courses. An evaluation carried out by UNESCO of the third and fourth grade of basic education in 13 countries in the region placed Mexico in the third group of countries, with a score below the regional average (UNESCO, 1998). It was in 9th place for the results of progress tests conducted in the third grade of primary school and 7th in mathematics tests in the same grade (Observatorio, 2000).

24. According to the OECD 2000 PISA results, Mexico ranks last in the OECD on the combined reading literacy for 15-year-old students, with 44 per cent of this age category at the lowest benchmark, more than double the average OECD ratio². In the application known as PISA Plus (spread in July 2003), the results average of the country are the following: 422 points in reading literacy and 387 in mathematic literacy. Both scores are significantly lower than the average of the OECD countries (500 points in both tests) but higher than the average of the Latin American countries that participated in this survey (395 in reading and 357 in mathematics).

2.3. The strategy for change: the agreement on decentralisation

25. The year 1992 marked the start of a new round of educational reforms designed to solve the challenges of coverage, quality and equity in the national education system. In that year, the main political actors in the education system signed the National Agreement on Modernisation of Basic Education in which they agreed to three major changes: reorganisation of the education system; reformulation of content and materials; and, lastly, enhancement of the value or importance assigned to the work of teachers, giving it the professional status and appreciation it deserves³. The agreement was the necessary political base for the passing of the General Education Act (*Ley General de Educación – LGE*) in 1993.

26. The Act contained the following provisions: the decentralisation of the administration of basic education and teacher training (from the Federation to state governments); the raising of the length of compulsory basic education from 6 to 9 years; curriculum reform in basic education; the development of compensatory programmes; the strengthening of multicultural and bilingual education⁴; and the creation of a national system for evaluating the quality of education. The reform initiated by this Act has given rise to fundamental changes in the education system, monitoring systems, content and methods, as well as redefining the relationship between the Federal State and education.

27. This new cycle of reforms needs to impact simultaneously on two highly complex and often conflicting dimensions or processes: on the one hand, the transfer of the administration and financing of the basic education system and, on the other, the improvement of the efficiency and quality of educational methods and their results. The first dimension involves institutional factors and the second the practice and characteristics of the teaching and learning process itself.

2. This is the average score for aptitudes in reading, mathematics and science. See CENEVAL, 2003.

3. SEP National Agreement on Modernisation of Basic Education, document signed and presented on 18 May 1992, Mexico, 1992.

4. There are 62 recognised ethnic groups and each of them has its own language. There are close to 300 variants (dialects) of those 62 languages. (UNESCO, 2001: 258)

28. The decentralisation of education undertaken in 1993 is the greatest institutional reform of the last 20 years. It transfers responsibility to the states for the administration and operational management of the system at all levels of basic education and teacher training, and the definition the local content of the national curriculum. The Federal Government, for its part, retained responsibility for developing study plans and programmes in primary education, secondary education and teacher training, developing and updating free text books, and designing compensatory and bilingual education programmes for the poorest sections of the population.

29. Under the Zedillo Government (1994-2000), an important reform of the basic education curriculum and teacher training degrees was undertaken (COMIE, 2003). From the point of view of the system's organisation, states' powers were strengthened and, to maintain the national character of the system, the Federal Secretariat of Public Education was made responsible for designing plans and programmes, preparing textbooks, planning, and evaluation of results, and for promoting equity in the school system. In this way, central government has retained a high degree of control in defining the content of the education process and the system of evaluation.

30. Despite the fact that the agreement and the Act refer to basic education, their repercussions impact at other levels of the system and transcend the boundaries of administration, exerting a direct influence on teacher training and teaching methods. An example of this are the changes introduced between 1995 and 2000 at the upper secondary level of the national technical education system, such as the creation of new teaching institutions for which the states were responsible, progress in rationalising the choice of courses, measures to train and upgrade the teaching profession, and the introduction of management and results of the education process (Didou and Martínez, 2002).

31. The education policies promoted by President Salinas and continued by President Zedillo have, since 1989, included important changes in Mexico's higher education system, with the promotion of external evaluation and accreditation policies; funding related to evaluation; and higher technical education, with the technological universities (similar to the American community colleges and French *instituts universitaires de technologie*), offering two-year programmes. From 1996, these policies were reinforced with programmes such as those described below (2.4(c)): FOMES, PROMEP etc.

32. There are still limits to this decentralisation. Different actors indicated in interviews that many states still do not have a united administration for former federal and state services and that a centralised approach still exists; for example, in the legislation governing the education system and the definition of aspects such as the curriculum and evaluation. In these aspects, the particular characteristics of each state are generally not taken into account by the central authorities (Observatorio, 2002:61). Moreover, government interference in these and other areas is accentuated by its control over the financing it transfers to the states (COMIE, 2003). Mexico's highly centralised tax system has, as one of many consequences, a very high dependence by states on federal funding.

33. The political changes that occurred in July 2000 also meant a change of approach in education policy. Upon his election, President Vicente Fox formed several working groups, known as "transition teams", and the Education Coordination group prepared a document with the title "Basis for the elaboration of the 2000-2006 education programme". It was on the basis of this document, and the specialist consultations with various social sectors, that the new authorities drew up the National Education Programme 2001-2006 (SEP, 2001).

34. This plan, based on the 1992 agreements, defines three strategic objectives that give a new impetus to the process of change. They are: enhancing equity in education; improving the quality of

results; and promoting federalism and social participation in education⁵. This plan sets out the policies currently being implemented (2001-2006) and offers a clear focus on quality and the development of the decentralisation of education, thus reinforcing the cycle of reforms outlined in the 1992 Agreement.

2.4. The results of the decentralisation and new challenges for education policy.

35. In the following sections, we shall briefly analyse the changes in the education system, at the various levels, resulting from this reform. Furthermore, we shall highlight some of the challenges and the principal new initiatives of the current education policies.

(a) Basic Education

36. Basic education in Mexico consists of pre-school, primary and lower secondary school education. The institutional changes and the new regulatory framework have led to an increase in coverage, particularly at the initial levels of the system. The General Education Act made it compulsory for the State to ensure that children entering primary school had attended at least one year of pre-school (SEP, 1999). Since 1990, statistics show that the number of children of school age (6 to 16 years) not in school fell steadily to 2.5 per cent in 1995 (Muñoz, O., 2000). The net rate of school attendance for children aged 6 to 14 years rose from 86.5 per cent in 1990 to 92.4 per cent in 2000 (SEP, 2002:14).

37. In addition, in the last ten years rural and multicultural bilingual education has been strengthened at all levels, and considerable efforts have been made to ensure that indigenous and village children have access to pre-school education. In the period 2000-2001, these children represented 12.2 per cent of enrolment (SEP 2002:13). In the late 90s, some 80 per cent of children aged 5 years were receiving pre-school education in one of the three forms: general, indigenous and community schools.

38. The General Education Act recognises that the State has an obligation to promote equity in education. In the last 10 years, this obligation has focused on so-called “compensatory programmes”. In that period, considerable resources were allocated to targeted programmes implemented in the country’s poorest states, in which over 40 per cent of the indigenous population live (Winkler, 2002:214)⁶. Noteworthy among them are PROGRESA and the Programme to Combat Educational Backwardness (PARE I and II), whose actions included improving infrastructure, distribution of teaching materials, training, and incentives for teachers (UNESCO, 2001)⁷.

39. The evaluations completed by these programmes, chiefly that of PROGRESA, show positive impacts on access to education and the regular and long-term attendance of school by children, principally girls (Observatorio, 2002:85). However, programmes of this kind have less effect on the quality of

5. The concept of “federalisation” has two meanings in Mexico. Prior to 1993, the concept alluded to the idea of centralisation of the Federal State. After 1993, on the other hand, “federalisation” refers to decentralisation of the system.

6. The states are Hidalgo, Guerrero, Oaxaca and Chiapas, where over 80 per cent of the population in each lives in a state of poverty (Muñoz Izquierdo, C. et al., 2002:505)

7. PROGRESA is a compensatory educational programme run by the Secretariat of Social Development (SEDESOL). Its main objective is that of strengthening educational demand by distributing a subsidy among low-income families with school-age children. This is designed to increase coverage and keep students in school. See Mexico, (SEDESOL). Outcome Evolution of the PROGRESA programme, 2001. www.sedesol.gob.mx/progresas. Since march 2002 there are a new program denominate “Programa de Desarrollo Humano Oportunidades” See www.oportunidades.gob.mx

courses. The subsidies given to families do more to support attendance and staying at school than the quality of the educational results achieved by the pupils concerned (Observatorio, 2001)⁸.

40. In the last few years, basic education has been the main focus of the reforms. As well as the institutional reorganisation resulting from decentralisation, there has been a major reform of the curriculum at primary and secondary level, new textbooks have been prepared, and changes have been introduced into the curriculum package and organisation of initial training (teacher training colleges) and continuous training of teachers (teacher centres, courses and workshops). The reform of the curriculum is in process and is expected to be in place as of the 2004-2005 school year.

41. Despite the policies outlined, many of the measures promoted by the reform do not reach the schools let alone the classroom (Ramírez, 2000). There is a broad consensus that if the school does not become the vehicle of change, it will be difficult to improve the quality of teaching and the educational climate, which are two key elements of improved performance.

42. To tackle this problem, a broad programme, the Quality Schools Programme (Programa de Escuelas de Calidad – PEC)⁹, was launched in 2001, making the school the prime instrument of change.

43. The core objective of the programme is to improve the quality of the education received by each pupil by intervening in the management of schools, development of a school plan, strengthening of the school leader function and creation of a culture of evaluation (SEP, 2001). Resources are provided to participating schools, which decide on their allocation through projects under a 5-year improvement plan with measurable targets.

44. The programme has become symbolic of current policies. This can be seen in the increase in the number of participating schools from 2,240 in the first year (2001-2002) to 9,818 in the 2002-2003 school year. The current coverage is 4.4 times higher than the first year (Álvarez, 2003) and it is hoped it will reach 15,000 in the 2004-2005 period. An evaluation of the results achieved in the first years of operation is currently in progress.

(b) Upper secondary education

45. Upper secondary education has undergone major changes in recent years, both in its institutional organisation and study plans and award of certificates. In the 70s, the technical education system became independent of the universities and was organised in two ways: technical baccalaureate and technical-professional courses. Under the previous Government, the process of decentralising the baccalaureate was begun. This decentralisation is continuing under the present Government and now includes technical education.

46. As regards study plans, educational provision has been redefined in order to adapt to the new skills and requirements of regional and national economies. Because of these changes, a strong general background, stressing basic content, replaced early specialisation, and a wide array of specialisations was reduced to a more limited number of generic career options. (Didou, S. et al, 2000). Overall, the system of upper secondary education takes in 93 per cent of secondary school leavers. However, not all of them are

8. For evaluations, see: SEDESOL, evaluation of PROGRESA results, 2001, and CONAFE, information on compensatory programmes.

9. The definition, terms of reference and performance indicators of the programme were published in the Official Journal (Diario Oficial) of Tuesday 3 April 2001 (part 1). Further information can be found at: www.escuelasdecalidad.net

successful in completing this level in the allotted time and with the required skills. Only 59 per cent of baccalaureate students and 44 per cent of those enrolled in vocational and technical courses complete their course. Plans and programmes have not been updated and institutional diversity has increased such that coordination and collaboration in the upper secondary education system are much affected (COMIE, 2003:5).

47. To enhance the quality of this programme, external evaluation and accreditation processes are included as part of the courses. One of the highlights in the area of external evaluations is the work carried out by the National Centre for the Evaluation of Higher Education (CENEVAL)¹⁰. CENEVAL's mission is to offer standardised assessment instruments for entrance to upper secondary and higher education institutions, and also to assess competencies of students of different degree programmes at the end of their careers.

48. The Centre undertakes external evaluation and accreditation of institutions, using, among other things, standardised tests of knowledge, certification of skills and evaluation of teacher training. It is hoped that the information and analysis generated will contribute to the public accountability of the education system and provide knowledge to the various actors and interest groups involved in public debate and decision-making on policies and issues affecting the education system.

(c) Higher education

49. The higher education system consists of public universities (independent or state), public technical institutions and private technical institutions or universities.

50. According to SEP statistics, in the school year 2002-2003 there were 2,236,791 higher education students in 4,486 schools. In two-year higher technical programmes, there were 65,815; 166,873 in licenciatura in teacher training institutions (escuelas normales); 1,865,816 in other licenciaturas in universities and technological institutes; and 138,287 in graduate studies. The 4,486 schools belong to some 2,000 higher education institutions.

51. For accreditation processes there are more than 20 specialised agencies for the accreditation of different undergraduate and graduate programmes. In November 2000 an organisation was created to regulate their functioning: the Council for the Accreditation of Higher Education (Consejo para la Acreditación de la Educación Superior, COPAES).

52. Mexico's higher education qualitative problems include, among others, an excessive concentration of enrolment in several programmes; low graduation rates; a low proportion of full-time faculty; and a low proportion of faculty with graduate training. As in other levels of the education system, there is a large amount of inequality, with very good and very poor programmes and institutions.

53. In the 1990s a process aimed at fostering the improvement of the quality of teaching and scientific research in higher education was launched by SESIC. Since then, various programmes aimed at the modernisation of the sector have been implemented. The highlights among such programmes are the "Funding Programme for the Modernisation of Higher Education" (FOMES) and the "Programme for the Improvement of the Teaching Profession" (PROMEP) in effect since 1996 and in the present administration unified in the Integrated Program for Institutional Consolidation (PIFI). Thanks to these programmes and through competitive funding, universities have secured additional funding for

10. www.ceneval.edu.mx

reorganisation and institutional strengthening, improving the quality of teaching staff, enhancing team stability and extending the working hours of academics involved in research (COMIE, 2003).

54. In addition, the policies placed special emphasis on promoting postgraduate studies through the Integrated Programme to Promote Post-Graduate Studies (PIFOP). By 2000, enrolment at this level was 2.7 times higher than it was in 1990, mainly in the area of education and the humanities (COMIE, 2003:7). The education sector had a total of 15,379 students in 2000, 13 per cent of the total number of post-graduate students enrolled. Of these, 88 per cent were teachers, most of whom were studying for a master's degree, the chief means of career development for teachers (ANUIES, 2000).

55. In the last few years, the situation for Teacher Training Colleges (*'Escuelas Normales'*) in basic education (471 teacher training and higher education colleges) has become more complex. According to the Educational Federalisation process launched in 1992, all public Teacher Training Colleges should now be State Teacher Training Colleges (funded and run independently by each State instead of by the central government). However, thus far only 125 out of the 290 public Teacher Training Colleges have been "federalised" (turned into State Teacher Training Colleges). The former exist alongside other public State Teacher Training Colleges (*Escuelas Normales Estatales*), which despite being funded by the central government, were originally created and run by each State, and thus follow a more local tradition. Such differences in school organisational culture make it difficult for States to integrate and coordinate teacher training programmes under only one system. (Maya, O. et al. 2003).

2.5. Conclusions

56. Mexico has made enormous strides in the coverage of the educational system, especially in primary education. This historic effort was achieved through the creation of alternatives and different means of service delivery in education, which resulted in an increase in the complexity of the system and its institutions.

57. Mass access to school and the diversity of the population served by an increasingly complex system in turn generated new challenges of regulation and academic administration, which affected the efficiency and quality of the education system. Until the late 80s, the system showed its limitations not only in the way it was administered but also in the teaching content and methods which became outdated and irrelevant in relation to the advance of knowledge and the country's structural reorganisation and international integration.

58. In 1992, the strategic actors in the educational field came together in a political and social commitment of great significance. This gave rise to a new round of reforms based on decentralisation, improved efficiency, quality, and relevance of the results of education. The reform produced fundamental changes in the education system, the monitoring and evaluation systems, the content and characteristics of the learning processes and also redefined the relations between the Federal and State responsibilities for education.

59. In the last 10 years, the main change was the decentralisation of the system. Currently, 71 per cent of enrolment is in schools administered by state governments, in contrast to the situation 10 or more years ago. Decentralisation has permitted major changes in the design and administration of public policy and has also led to a redistribution of functions and responsibilities within the education system. Central government has transferred important functions but maintains control over substantive aspects such as defining the curriculum, producing textbooks and the system of evaluation.

60. As regards content, an important curricular reform has taken place at primary and lower secondary level. New textbooks have been produced and changes made in the curriculum structure and organisation of initial training (teacher training colleges) and continuing training of teachers (teacher centres, courses and workshops). In the same vein, changes have been made at other levels of the system, such as upper secondary education (e.g. technical education) and higher education, including post-graduate studies.

61. The 1992 Agreement defined education as a State policy, thus ensuring continuity of the main lines when the new Government of President Vicente Fox took office. Following a major consultation process, the National Education Plan was drawn up in 2001, incorporating the 1992 Agreement. The plan sets three objectives: promoting equity and quality in education, decentralisation (educational federalism), and social participation.

62. Current policies are extending decentralisation, retaining a regulatory power to the Government. As regards quality and equity, programmes are being targeted at the poorest sectors, as well as encouraging changes in management styles and teaching methods. As a form of support to these substantive processes, complementary policies are being implemented to provide resources, textbooks and teaching materials, as well as assistance to students and schools to improve the learning environment. The challenge now for policies is to make educational establishments the prime instrument of change and teachers the protagonists of educational innovation.

3. EDUCATIONAL RESEARCH AND DEVELOPMENT IN MEXICO

63. This chapter contains an evaluation of the current state of educational research and development (R&D) in Mexico. The information provided here is complementary to the Background Report for the OECD review on Mexico's educational R&D system and serves as an introduction to Chapter 4, which focuses specifically on the key themes to be addressed in order to strengthen the overall effectiveness of the Mexican educational R&D system in developing and applying knowledge for the improvement of the quality of educational practice and policy.

3.1. Historical overview

64. Although many authors agree that the 70s are the key decade in considering the development of educational research in Mexico (e.g. Arredondo et al., 1984; Martínez Rizo, 1996), it is necessary to go back to 1936 to find its roots. That was the year that the influential National Institute of Education was created. Later, in the 50s, two UNESCO institutions of major importance to educational research were founded, the Regional Centre for Adult Education and Functional Literacy for Latin America (CREFAL) and the Latin American Institute for Educational Communication (ILCE). In the sixties, a considerable stimulus came from the creation of the Centre for Educational Studies (CEE) in 1961, and the first doctorate of education in the National Autonomous University of Mexico (UNAM) (Martínez Rizo, 1996).

65. It was the 70s, however, which produced the institutionalisation of educational research in Mexico, enhancing its recognition and status in the scientific community and making it a point of reference in decisions on public education policy (Gutiérrez, 1999). In that decade, 23 research centres were created, most of them in public universities, notable among them the Department of Education Research in CINESTAV-IPN, in 1971, and the National Pedagogical University, in 1978 (which incorporated the National Institute of Education).

66. Over two years, 1980 and 1982, the educational research "congress process" took place in several cities across the country, culminating in 1981 with a major event, the 1st National Educational Research Congress, the conclusion of that successful period. Professor Pablo Latapí, the driving force behind the first Congress, prepared a paper for it: "Diagnostic of educational research in Mexico" (Latapí, 1981), which contains a preliminary critical review of its state. It is interesting to note that several of the challenges for educational R&D identified over 20 years ago are still just as evident today. As Latapí points out, the state of educational research in the early 80s was, overall, still very much in its infancy.

67. The 80s was a difficult decade for educational R&D in Mexico. The economic crisis had a considerable impact on the development of education as well as educational research. Salaries declined for academic staff and support for educational research diminished. However, three important facts should be highlighted at the beginning of this period: the establishment of the National Indicative Programme of Educational Research, in 1981¹¹; the creation of the National System of Researchers (SNI) in 1984, to

11. The National Educational Research Guidance Programme was an initiative developed by the CONACYT between 1978 and 1982. It was designed to foster and guide the development and strengthening of research programmes. See Latapí, P. 1994.

which reference will be made below; and, lastly, the stimulus given by the Secretariat of Public Education to research activities, basically under the auspices of the Study Group for Education Finance (GEFE).

68. In 1993, the 2nd National Educational Research Congress took place. As on the previous occasions, there was an interesting in-depth review of the educational research conducted during those years, known thereafter as the “elaboration of the state of knowledge” (Weiss and Maggi, 1997). The Congress highlighted that the number of educational research centres was growing, the existing ones were growing in strength and becoming more professional, and the number of educational researchers was gradually increasing.

69. Thus a summary of the progress is provided by Weiss and Maggi (1997), who maintain that at the beginning of the 90s there was great heterogeneity in the field, in terms of subjects of study, methodological approaches, quality of research, researchers, and institutions where educational research was carried out, which makes it almost impossible to speak of general scientific activity at a national level meeting specific national priorities. It highlights the work of a small group of institutions belonging to specialist research centres or state universities, and the enormous challenge of overcoming the high concentration of educational researchers in the metropolitan area of the country’s capital.

70. The 90s marked a new era in educational research. Among the events which ushered in this new era were the foundation of the Mexican Council for Educational Research (COMIE), the National Educational Research Congress, mentioned above, both in 1993 and, a year earlier, the political consensus of the National Agreement on Modernisation of Education which, although not directly concerned with educational research, had major repercussions for it.

71. The National Agreement on Modernisation of Education provides for the decentralisation of basic education and teacher training. As seen in the previous section, the Federation transferred the operation of this sector of education to the states. Consequently, the state administrations carried out diagnostic studies to discover the state of the education that the Federation was assigning to them and on that basis drew up their development plans. The Agreement also brought about an increase in the grants allocated to education, although the majority were concerned with raising teachers’ salaries, and increasing the transfer of resources for education from the Federation to the states, known as “Federal participation”. Thus a few states began to have resources which, in some cases, were allocated to educational research.

72. COMIE, as the association which unites the greater majority of the country’s educational researchers¹² does excellent work in promoting educational research in Mexico. Since its formation in 1993, it has organised biannual conferences and is a real driving force behind educational research in Mexico. In 2003, a new compilation of the state of knowledge was presented, analysing progress and difficulties in the last decade of the 20th century.

3.2. Educational researchers

73. According to different sources and criteria, the number of researchers in Mexico ranges from 300 to 501 (recognised by the National System of Researchers (SNI), members of COMIE and identified by Colina and Osorio, 2003). However, studies by the Programme for the Improvement of the Teaching Profession (PROMEP), initiated and coordinated by the Under-Secretariat for Higher Education and Scientific Research in the Secretariat of Public Education, show that the number of “educational research workers” (a broader concept that encompasses all people involved in carrying out research work, i.e. assistants or administrators) comes to 1,804 for the whole of Mexico. This disparity in the figures is due to

12. In 2003, it numbered 251 researchers. Interview with Margarita Zorrilla, COMIE President.

the different requirements needed in order to be considered a researcher, and the lack of a clear definition of the relevant profile.

74. Be that as it may, it seems that there is agreement about the following problems:

- The **number of researchers** is clearly insufficient in comparison with the size of the Mexican education system and the existing needs. As pointed out in the Mexican Background Report to this review, the ratio of researchers (defined in the strict sense) to teachers of only .03 percent is truly sparse. This number, however, has been rising constantly since 1993. From 1998 to 2003, it rose by 64 per cent (COMIE, 2003:9).
- Their **academic training** is clearly inadequate. One of the grave problems hampering quality educational research in Mexico is training of researchers. Post-graduate studies are a privileged area for the training of researchers, whether in a master's degree or doctorate studies. At present, a broad range of these kinds of programmes are available in Mexico. With 274 master's degree courses and 34 doctorate courses, educational research is the discipline with the most postgraduate students after management studies. However, only four doctorate programmes and 11 master's courses are recognised in the National Post-graduate Register (PNP) by CONACyT¹³. To that should be added the difficulty of going abroad to study for a doctorate.
- According to SNI criteria, 58 per cent of researchers are **concentrated in the metropolitan region** of Mexico City. This problem had already been identified over 20 years ago, and is confirmed as a problem in all the studies carried out since then. It could be hoped that with the decentralisation begun in 1992, the problem would be in part resolved, but the statistics suggest that this is not the case. Moreover, out of a total of 31 states, excluding the Federal District, the fact that 8 or 10 are interested in promoting research may increase research in some areas of the country, but may also widen the gap with other states, usually the least developed.
- Lack of the right **conditions** for undertaking educational research. Thus, Díaz Barriga (1998) maintains that the great challenge at the end of the decade and the beginning the 21st century, rather than being the increase of educational research, must be to enhance the institutional conditions that allow rigorous educational research activities to be carried out.

75. It is also important to emphasise that the profile of the educational researcher in Mexico and Latin America is very different from that in most other OECD countries. In the United States and Europe, researchers concentrate on teaching in post-graduate courses and carrying out research. In Latin America, on the other hand, researchers generally perform several functions at the same time and switch easily between research, teaching, consultancy, decision-making and direct intervention. Indeed, researchers undertake teaching work, research, advise public institutions, and work with civil associations, trade unions, etc. In the higher education system, only 30 per cent of teachers are on full-time contracts and the remaining 70 per cent combine their teaching and research activities with studies, consultancies and teaching activities in other establishments, both inside and outside the system. This fact affects the opportunities available for the accumulation of knowledge, the strengthening of research teams and networks and certainly undermines the quality of research work.

13. CONACyT is the acronym for the National Council of Science and Technology, the body responsible for the country's scientific and technological development policy. It provides funds for training scientists and technological experts and for research projects.

76. In this way, as in most of the countries in the region, there is free movement of researchers from the social sciences across to the public administration. In disciplines such as economics and the political sciences, such people are called “Technopolists”.

77. The educational system and the authorities may benefit from this kind of flexibility, since it allows them to have highly academic teams of advisers. Indeed, we found in our interviews that several of the best educational researchers (some in the SNI) currently work as advisers, in executive or senior positions in the Secretariat of Public Education and other government institutions in the system. However, this benefit to the system weakens the original research centres and, at least for a period of time, separates highly experienced academics in their prime from teaching and research. On the other hand, it allows for an important transfer of knowledge in the Mexican education system, as these researchers are both producers and users of educational R&D.

- The **average age** of Mexican educational researchers is high, over 50, with a striking absence of young researchers. This is a matter of concern, since generational regeneration is needed, not only to ensure research in the future, but, as Díaz Barriga (1998) asserts, because each generation has its own ways of building knowledge and of formulating of specific queries. However, if the widest definition of educational researchers is included, the average age of a Mexican educational researcher is less than 50 years.

3.3. Research institutions and research communities

78. Educational research has been developing in a broad and heterogeneous range of institutions and centres. The places where research is done may be exclusively research centres, universities in which research and postgraduate teaching take place¹⁴, research units and study teams in the Secretariat of Public Education, planning departments and some education departments in the states (study teams) and a broad and diverse range of institutions and civil society associations (NGOs). It is interesting to note that since 1991 the National Union of Teachers has had a foundation whose tasks include educational studies and research.

79. These institutions are public or private, national or local in scope, of varying size and composition and, to differing degrees, linked to international networks and programmes. This heterogeneity of scope is also reflected in the different subjects, organisational structures, resources and the quality of results and the impact of their research.

80. The heterogeneity of educational research can be described on the basis of two main criteria. The first is the direction or predominant type of research and studies done and the second, its relation to the demands and requirements of public education policies and educational practices in schools.

81. The orientation or predominant type refers to the traditional distinction between basic and applied research. The two types involved acquire different strategies in the production of knowledge and the methodologies used. Basic research is aimed at the production of knowledge in a given problem area, is of theoretical or conceptual relevance, and tends to be discipline-based and longer-term. Development research, on the other hand, has an applied orientation; it is often interdisciplinary and contemporary. The knowledge is produced for the purpose of designing and implementing solutions to identified problems that require a rapid solution.

14. An indication of this heterogeneity, for example, can be seen in the institutions and higher education programmes engaged in research www.anui.es.mx

82. The two types of research are closely linked but retain their own specificity and justifications.

83. As to the relationship between research and the policies' problems, two main orientations emerge. On the one hand, a type of autonomous research more related to the discipline and knowledge accumulated in specific fields and, on the other, research directly related to educational problems in the system and the need to take decisions.

84. Research institutions of the first type have a more self-regulatory capacity and generate programmes and projects based on their own requirements and accumulated knowledge. In most cases, these are institutions accredited by the public system. Among the institutions of the second type, however, one can come across some public institutions and less institutionalised organisations. The latter are institutions and associations whose activities depend on their linkage to the proposal of solutions to specific requests.

85. In this institutional diversity, it is possible to identify distinct "communities" of researchers. Some of them belong to a group mainly dedicated to basic or academic research. Others promote and participate in applied research and the design of projects and technologies to solve immediate problems.

86. There are links between the two communities and, in many cases, the same researcher can belong to both communities. COMIE is in a position to unite both types of researcher and has made the research congress an event of great impact on the different communities. However, there are also important differences between the two types of research concerning their legitimacy and validity. Academic communities centred on basic research represent the legitimate authority in the field of academe and their knowledge is publicly recognised and accredited. The other communities have a secondary position because their knowledge does often not enjoy public accreditation and legitimacy.

87. Taking these two distinctions and their relationship into account it is possible to identify four major institutional realities and research communities in educational research in Mexico.

Table 3. Types of Research and Impact on Educational Policies

Relation to needs of the system and policies	Orientations of educational research	
	<i>1. Basic and academic research</i>	<i>2. Applied and development research</i>
Relatively independent of policies and centred on areas of knowledge	1.1. Specialist university centres, SNI researchers (Academic research of excellence)	2.1. Researchers, centres and foundations associated with training and practice of teachers and/or specific actors or groups (adults, indigenous peoples, women, among others) ("Organic" research)
Involved in policies and solving problems in the system	1.2. High level academics and centres which advise and/or are involved in policy-making ("Targeted research")	2.2 Researchers, centres and NGOs which advise the education authorities and others and develop models and technologies to resolve problems. They respond to demand ("Instrumental research")

88. These relationships help in drawing analytical distinctions to take account of the heterogeneity of institutional realities and academic communities in the field of educational research. However, in actual practice there are many relationships between researchers and different types of communities.

89. Below we present some of their characteristics, based on interviews and meetings with the various actors and institutions in educational research during the mission.

1. *Basic and academic research*

90. The centres representative of this orientation, in which the situation is optimal from the point of view of academic research, are the specialised centres (public and private) and some university institutes.

91. Among the public research centres encountered during the mission, the Centre for University Studies (CESU), in the Autonomous University of Mexico (UNAM) and the Department of Educational Research (DIE) in the Centre for Research and Advanced studies (CINVESTAV) stand out. Among the private institutions, the Ibero-American University, and the Monterrey Technological Institute of Higher Studies (ITESM), among others, should be noted for their importance. In this community, it is possible to identify researchers with a greater degree of autonomy and self-regulation and other academics devoted to the production of knowledge related to policies and decision-making.

1.1. Specialist University Centres and SNI researchers

92. The few educational researchers recognised by the SNI in the field of education are contracted mainly in these institutions, and two of them in particular, CESU and the DIE.

93. In general, the researchers belonging to the SNI and this type of institution mostly complete post-graduate education abroad. They participate in exchanges and relations with international groups and, as a rule, their level of productivity is competitive. They are often called as the research elite. In these groups, the predominant concern is development of knowledge in specific subject areas (e.g. mathematics teaching, history of education, learning, school ethnography, bilingualism, sociology of education, anthropology of education, among others) and paradoxically these researchers have been chiefly concerned with higher rather than basic education, except for the work of the DIE and the Institute of Education Studies in the Ibero-American University where the main object of the research relates to the problems of basic education.

94. In this community, the autonomy of academic work acquires a high value and they have difficulty in accepting government suggestions or with the setting of thematic priorities that come from above or from outside the field (for example from the SEP or CONACyT, etc.). The development of subjects and teams depends more on personal leadership than institutional and collective decisions. “Researchers value academic autonomy and do not want to surrender to interests defined ‘from above’” was an important message that we retained from the interviews. The researchers carry out long-term projects more independent of current circumstances and specific urgencies.

95. In the cases interviewed (especially university centres), lines of research and publications are agreed institutionally by the research community. When there are external demands for pure or applied research, they are satisfied on the basis that the relevant teams and accumulated knowledge already exist. “External projects must fit into the internal lines of research”, declared the director of the DIE. But it is also true that this research centre developed some important innovations for the system of basic education, like primary textbooks for Natural Sciences, Spanish and Mathematics or the didactics and teaching and learning materials for CONAFE’s multigrade schools. These lines are obviously very relevant for basic education policy; so it is easy to have a good fit between internal lines of research and external demands from SEP.

1.2. *High level academics and centres which advise and/or are involved in policies*

96. In addition, high level academics can be found who have a closer relationship with the policy field and influence decision-making. Outstanding here are individual academics and centres such as the DIE, the recently formed educational research unit in the Ibero-American University and the Centre for Educational Studies. These centres have successfully established a smooth relationship between research and decision-making and research and schools in the public system.

97. A good example of how this type of relationship is promoted is through the recently formed Education Sector Research Fund, operated by CONACyT and the Secretariat of Public Education in the framework of the Special Programme on Science and Technology 2001-2006.

98. In the framework of this agreement, the Under-Secretariat for Education services for the federal District (SSEDF) has invited research centres and researchers to put forward proposals for research that meet the requirements established by the Under-Secretariat¹⁵. These requirements mainly include quantitative analysis of the principal dimensions of basic education in the Federal District, alternative models of school management in basic education schools in the Federal District and teacher training¹⁶.

2. *Applied and development research*

99. There is a little known heterogeneous group of researchers that is closely linked to the solving of specific problems in the “real educational world” and the professionalism and identity of actors such as teachers, young people, and adults working in the non-formal system. In these cases the production of knowledge serves to develop solutions for specific problems in public institutions or affecting teacher training and practice.

100. A considerable proportion of the researchers in this community have initial or intermediate training. They are academics, as a rule, younger, with mainly national post-graduate qualifications at master’s level. They are little involved in the rounds of meetings or in publishing in specialist journals. Several of the researchers in this community have developed a high degree of specialisation in their field of work (for example, curriculum design, continuing teacher training, and evaluation) and they are frequently in demand by the authorities and institutions in the field of education policies.

101. Two main types of community can be identified in this orientation. On the one hand, there is research in complex institutions such as the National Pedagogical University and the Secretariat of Public Education, which produce knowledge applied to teacher training and practice and teaching methods. On the other hand, there are researchers who study the teachers’ lessons and practice and develop solutions to a variety of educational problems such as literacy, bilingualism, training and other matters relating to the education of young people and adults.

2.1. *Researchers, centres and foundations associated with the training and practice of teachers and/or specific groups or actors (adults, indigenous people, and women, among others)*

102. In this category we place research work done mainly in the National Pedagogical University (UPN) and some research units in the state secretariats of education. This University was established 25

15. See CONACyT funds 2003-0 Invitation SEPSEDF-CONACyT 2003 www.conacyt.mx/fondos/sep/sep2003-02

16. The Under-Secretary, Silvia Ortega, confirms that it is an invitation to researchers to carry out research directed by the Under-Secretariat. For example, they will be given access to the quantitative databases and it is hoped that they will undertake analysis relevant to the concerns and interests of the Under-Secretariat.

years ago to allow in-service teachers to obtain a college degree¹⁷. It began life as the teachers university with the role of directing the teacher training process. The training provided here gives a degree and there is also a doctorate of education.

103. The researchers who work here are more involved in consideration of teaching practice and specific education policy issues. The research they do is closer to the reality of the teacher in basic education and the problems of teaching practice in a variety of real-life situations. It is research at the service of practising teachers and their training processes. The subjects covered include chiefly teacher training and institutional practice, mathematics teaching, teaching of natural sciences and education theory, education theory and multiculturalism, among others.

104. Their research seeks to “develop and disseminate research which contributes to building an educational model for teacher training”. It seeks to provide innovative solutions to the demands and needs for continuing training of teachers responsible for training basic education teachers, and to promote the sharing and publication of experiences by individuals and institutions responsible for this work. It seeks to generate and publish studies to promote the social value of the teacher’s role as an agent of change. Lastly, it undertakes research, teaching and dissemination of history as a discipline and a subject to be taught¹⁸.

105. In the past the National Pedagogical University has not been able, with sufficient force, to carry out research on pedagogical practice, teaching problems, and local school management, and to take advantage of the national coverage of its 76 units across country to carry out large-scale empirical studies.

2.2. Researchers, centres and NGOs who advise the SEP or develop models and technologies to solve problems

106. These are the network of consultants and researchers with whom the Secretariat of Public Education and the Federal District mainly work, primarily on diagnostics, planning, project design and evaluation of results. The Federal District education system is especially important, but there are other states whose education systems also have interesting educational R&D activities. Communications are chiefly in the form of reports and papers provided to the clients of this type of research, who take responsibility for disseminating it. Interaction takes place through seminars, workshops and networking. Also noteworthy are the foundations and associations that produce studies and produce innovative designs based on the needs of specific actors. Some SNI researchers also participate actively in this community through policy evaluation studies or by performing consultancy or advisory work in specialist teams.

107. Also in this category are researchers and studies done within the SEP or in response to its requirements and demands. A good example of this type of research is that carried out or promoted in the Under-Secretariat of Basic Education and Teacher Training, particularly in the Department of Educational Research¹⁹. Among the topics covered by this type of research, the following should be highlighted: equity, diversity and serving vulnerable groups; promoting research and innovation in educational

17. Established by Presidential Decree in 1978 www.upn.mx

18. See the Forum on academic organisation, working group report, 29 January 2003, Group 4: Knowledge and teaching/learning processes; psycho-cultural and didactic cognitive processes; specific school and didactic learning. <http://www.upn.mx>.

19. In the Office of the Deputy Secretary for Basic Education and Teacher Training /Educación Básica y Normal there is a General Board of Educational Research. This Board fosters studies in fields such as: curriculum and teaching materials; training and updating teaching and learning processes; educational change, the educational environment and values.

evaluation; information systems for decision-making and opinion surveys on the impact of education policies and programmes.

108. Another community within this research orientation consists of independent groups such as civil associations and non-institutional consultancies or teams, which carry out applied research in the educational field.

109. The independent groups can be classified among non-governmental organisations. They are civil associations (the institutional and legal form of NGOs in Mexico) and follow applied research and action/research paradigms. They are further removed from academe but close to civil society and the implementation of specific projects in the field of teacher training, development of innovation in initial education, training for work, intercultural and adult education, among other areas of work. They act as project executing agencies (e.g. for the School Directorate within SEP and the Federal District), as institutions stimulating debate, and they encourage participation in civil society through specialist networks. They are familiar with research but rarely do they undertake research in accordance with traditional academic standards.

110. We were able to interview representatives of these different communities. The work they do was found to be valuable but, at the same time, there was a worrying isolation and lack of communication between the different communities and realities. Indeed, in the main, they move in their own circuit of production and circulation of knowledge without much interconnection. The academic researchers jealously guard their prestige by maintaining high barriers to access. CONACyT continues to be the authority that certifies and issues official recognition. This assessment is confirmed by other researchers involved in policy and decision-making, who point out that this type of research is often more a response to its own needs than to those of the country's educational problems. In such cases, the utilisation of educational research is often limited to the group that produces it.

111. On the other hand, we saw examples where academics and senior researchers were collaborating directly with the education authorities or with schools, developing new policies and programmes. These cases show that it is possible to create a more fruitful relationship between different research communities, without taking away the rigor that characterises the conditions of an academic researcher.

3.4. Relevance and quality of educational R&D

112. The topics for educational R&D in Mexico do not cover all the information needs for decision-making by practitioners and policy-makers. Most of the research is, of course, centred on topics concerning the country's need for educational development and the direct involvement of Mexican researchers in research to improve the quality of education. However, there is a considerable gap between the needs of decision-makers and practitioners and the concerns and interests of individual academics or working groups.

113. The field of educational research continues to be highly centralised. However, the experience of some states such as Jalisco, Sonora, Aguascalientes, and Guanajuato, which have developed educational research and research networks, is interesting. It all depends on the institutional capacities and personal initiatives taken by the state education secretaries and groups of researchers.

114. In summary, Mexican educational research has reached a high level of development in certain subjects, such as mathematics teaching, ethnographical research or the history of education, to mention a few outstanding examples. However, there are also major gaps. From the point of view of the information needs of decision-makers and practitioners, the following stand out:

- rapid development studies centred on the solving of concrete problems. Policy makers say that it is difficult to find good researchers to undertake the specific research they need to take specific decisions. There is evidence here of a tension between practical and applied research, which is short-term, and academic research, which is longer-term;
- studies of a quantitative nature, e.g. longitudinal studies. In Mexico there is a significant tradition of qualitative research, especially ethnographic, to the detriment of the training and development of researchers who can manage statistical tools with ease;
- research into educational evaluation. The growing importance of the evaluation of education systems in the Latin American and Caribbean region, the greatest example being the recent creation of the National Institute for Educational Evaluation (INEE), means that there is a need for professionals trained in these subjects and good work in the area.

115. Professor Pablo Latapí (2003) speaks of the need to promote what he calls “instrumental research”, i.e. areas of more immediate applicability, in subjects or problems that interest decision-makers at a Federal and state government level. He himself defines them as areas such as curriculum, financing and evaluation.

116. The search for the causes of this mismatch between needs and topics of research must necessarily address two interrelated elements:

1. The lack of direction, guidelines or criteria concerning subjects of research. Thus, the fundamental criterion tends to be the inclinations of the researcher or the institution to which he or she belongs.
2. The criteria for recognition of research work, which prizes thematic consistency or individual publications rather than the usefulness of the research or its ability to have an impact in practice. The typical example is the National System of Researchers (SNI).

117. Analysing the quality of the educational R&D performed in Mexico is more complex. At first sight, it is possible to maintain that three types of work co-exist. Firstly, there are a considerable number of high level studies, from only a few research institutions (such as the DIE or CESU and the three campuses at the Metropolitan Autonomous University (UAM)) at the pinnacle of Latin-American educational research, and which exert a powerful influence over it. This work is done by professional researchers with deserved prestige, national and international presence, who receive funds from CONACyT or international organisations and have resources for research, travel to conferences and the like.

118. Secondly, there is a considerable amount of work done that makes a contribution in the Mexican context. Most of it, however, would not stand up to rigorous evaluation under international criteria, and suggests scope for training. In essence, it is done by post-graduate students (master’s and doctorate) who, in the case of the good programmes, are students of the above-mentioned researchers. They also produce studies which are presented at Educational Research Congresses.

119. Lastly, mention should be made of a body of work that does often not meet basic research quality standards and that reflects the motivation and interest of teachers in carrying out research, but for which the researchers still do not have all the conceptual and methodological tools. An indication of the above is the quantity of work approved compared with the amount submitted for evaluation to the Scientific

Committee of the VIIIth National Educational Research Congress in November 2003, when only 250 were approved out of the 500 submitted, i.e. just half.

120. The quality of research varies depending on the community and institutional status described earlier. The SNI researchers have the highest prestige and meet international standards of academic quality. The groups with the lowest prestige for output and quality are those academics who do research organically linked with some state secretariats, NGOs and associations with some research experience but who do not undertake systematic research activities or dissemination of their work.

121. All this suggests that educational research in Mexico is in the middle of a process of training and development of its educational researchers. It has enormous potential that must be encouraged and developed.

3.5. Dissemination of research

122. According to the study by Díaz Barriga (2000) taken up in Mexico's Background Report, there were 61 journals in Mexico in 2000 devoted to educational topics, most of them aimed at teachers at all levels of education but predominantly those in basic education. Bearing in mind that there are up to one and a half million teachers, this does not seem an excessive number.

123. More specifically, six educational research journals are currently published, half of them recognised as reaching CONACyT standards. This number might seem excessively low for a country the size of Mexico, especially when taking into account the small number of publications by Mexican researchers appearing in foreign journals. However, considering that the researchers interviewed do not feel that there is a lack of opportunities for publication, the number seems appropriate to the output of existing research.

124. Put this way, the scarcity of educational research journals in Mexico is not a constraint on the dissemination of research, but an indicator of low output.

125. An especially relevant initiative for the dissemination of research is the elaboration and publication of the **States of Knowledge** of educational research produced by the Mexican Council for Educational Research (COMIE). To date, three sets have been published, for the years 1981, 1982-1993 and 1993-2003. All three sets of studies, as well as being an excellent initiative, show the progress achieved, and allow gaps to be highlighted and proposals to be made for the development of educational research. It is also an outstanding tool for use in research by political decision-makers and practitioners. The key question is whether it is used by policy makers and practitioners. In any case, it is an excellent initiative that will certainly have to be continued and perfected in the future. However, a shorter and a more easily accessible summary of the States of Knowledge should be widely distributed. Furthermore, COMIE should more systematically discuss the main conclusions of the states of knowledge with decision makers.

126. Also relevant is the work of the Citizen's Education Watch Group²⁰. The purpose of this organisation, founded at the end of 1998 by an eminent group of researchers, is to carry out periodic analyses of the state of education in order, at the same time, to put forward certain policy proposals. Today, the Observatory has become a point of reference and twice monthly publishes articles through the press. The Observatory was born as a means of promoting "social control over education" and promotes a direct relationship between a group of researchers and the political authorities and decision-makers.

20. <http://www.observatorio.org>

3.6. Support and financing for research

127. The development and promotion of research in Mexico is primarily the shared responsibility of CONACyT and SEP, specifically the Under-Secretariat for Basic Education and Teacher Training (SEByN) and the Under-Secretariat for Higher Education and Scientific Research (SESIC).

128. However, the states also have a mission to strengthen educational research within their administrative area. It should also be added that much research involves its own actions of promotion and financing of research, especially at the universities.

129. Two main characteristics can be seen:

1. A general lack of funds, with a few exceptions, devoted to educational research. It means that it has to compete with other more structured and developed disciplines. Actually, of the two types of CONACyT funds – the sectorial funds, intended to solve high priority problems in each sector of the Federal Government, and the Mixed Funds, financed jointly by CONACyT and the state governments – some 1.5 per cent goes to education. It is therefore clear that educational research does not have the highest profile or greatest support in these bodies. Thus, as Mexico's Background Report states, the total number of researchers engaged in educational research programmes and projects managed by CONACyT and SESIC is only 1 to 2 per cent of the total.
2. It accentuates the differences in the development of research in different states. Only 8 to 10 states are really carrying out educational research, thus accentuating regional disparities.

130. A further comment is called for by the National System of Researchers (SNI) because of the influence it exerts over educational research and its development. The system was created in 1984 with the intention of promoting Mexican research in all disciplines through the award of grants to complement the salaries of researchers who showed high productivity and quality. These grants were very high, and could be as much as 60 per cent of the researchers' incomes. Although it was created as a temporary programme, it has become a permanent scheme that has led to the establishment of a clear hierarchy among researchers. It is now a mechanism much criticised in educational research for the undesired effects it has generated. The criteria for acceptance into the SNI include the following:

- possession of a doctorate;
- full-time employment in a recognised research institution;
- publication of the output of the work, moderated by peer review. The outputs valued most are those published internationally in recognised journals;
- use of the work by other researchers, measured by the number of times it is quoted;
- training of other researchers, based on the number of degrees, master's and doctoral theses.

131. These criteria, perhaps because they were designed and directed by researchers in the experimental sciences, are in general not suited to the particular circumstances and difficulties of the educational researcher (Ibarrola, 1992, 2003). Moreover, it is characteristic that only two of the five criteria refer explicitly to the researcher's output.

132. This has led to the development of a type of research that is highly academic, hierarchical and individual and which is not necessarily capable of having a direct impact on educational realities. Thus, the SNI has become a system much criticised by a large part of the scientific community in general and educational researchers in particular. It can be stated that its role in promoting educational research is minimal.

133. During the mission it was found that, among some key senior officials of the Federal educational administration, there is a very favourable attitude towards research. Indeed, some of its officials not only had sufficient knowledge to understand and use it, but they also seem to be very aware of the latest advances in research. The key to this is that they themselves largely come from research.

134. This awareness, however, was not found among education policy-makers in the states in general. This reinforces the idea that the gap in the development and application of research between one state and another is might be widening. The compensatory function of the Federal Government thus has an important role to play here.

135. In addition, Mexican teachers do not usually seem to be in a position to use research systematically to improve teaching practice. We refer specifically to teachers in basic education, although the situation, with some particular features, can extend to teachers in upper secondary and higher education.

136. The problems basically fall into four parts:

1. Teachers rarely have the training to analyse and apply the results from educational research reports. There are no research-related subjects in current teacher training college plans.
2. They often do not have adequate working conditions for continuous training and the introduction of innovative activities. It should not be forgotten that a great many teachers work morning and afternoon in different schools, so that the time to improve their practice is limited.
3. Schools' limited autonomy makes it difficult for teachers to introduce new innovations.
4. Teachers do not have the means of continuing their training and keeping pace with current research. Despite the 62 education journals in Mexico mentioned above, these have a limited circulation. Thus schools do not receive these journals and do not have the space or facilities to store and consult them. The model chosen for their distribution through teacher centres does not seem to be working. Potentially, these centres could provide an important link to information/knowledge for school leaders and teachers regarding what works in educational practices. However, to achieve this, it will be necessary to change the labour/teacher training conditions and the culture of Mexican teachers.

3.7. Impact of educational R&D

137. Mexican educational research has, in general, had a limited impact on decision-making, both by politicians and administrators, and by heads and teachers. There are, however, examples of the strong impact of educational R&D.

138. It is clear that the factors that determine the effectiveness of research are many, complex and not at all well known. Thus Latapí (1994) suggests the existence of three processes that operate constantly, although not often in a linear form:

- a political process whereby the needs and interests of decision-makers converge with subjects, contexts and results of research;
- a scientific process that means that knowledge of a given problem is sufficiently consolidated;
- a social process of dissemination of the knowledge, which can be directly to decision-makers or practitioners, or through social groups.

139. In this way, the key elements for the research effectiveness would be political opportunity, the quality of the research and adequate dissemination. However, it seems clear that there are more elements at play. It is therefore important for policy-makers to have a minimum awareness and training to help them to use the results of research. And practitioners must have the training to be able to understand the results of research, as well as the time, opportunities, autonomy and motivation to use them.

140. Mexico's experience is a good example of how politicians or top educational authorities are not the only ones involved in decision-making. Defining education policy at education system level is a complex process involving many actors and influenced by various factors of a political, technical and even ideological order.

141. Frequently a good technical recommendation, which is opportune and relevant, may not be politically viable because of trade union opposition or other corporate interests. In other cases, public pressure and debate can put an item of education policy not considered in government circles on the agenda; such as the quality and equity of education or education evaluation, which was repeatedly raised by researchers until it was gradually included in the formal programme of recent governments.

4. DISCUSSION OF THE CHALLENGES

142. The OECD review team was impressed by the energy and variety of Mexico's educational research community and by the interests of policymakers in improving the interactions among research, policy and practice. However, we also saw a number of challenges, which can best be expressed as a series of gaps between the need for and interest in educational research and the ability to produce and use the necessary research.

4.1. The Focus of Research

143. Mexico has made significant educational accomplishments. It has vastly expanded access to education, rationalised the authority for education among the federal government and the states, and made efforts to improve education quality as well as equity. It faces a number of challenges in carrying out these reforms. Access to secondary and higher education remains limited, conditions and capacities are uneven across the various states, and teachers live a rule-bound existence, with constraints imposed by both labour and government. Despite these challenges, which mainly concern basic and secondary education, most educational research focuses on higher education. The focus of research on higher education is related to the lack of resources for doing research, especially field and large scale research. Furthermore, researchers can apply for funds from the university, which are weighted towards research on higher education problems. In addition, with basic education so centralised prior to 1992, researchers may have perceived a lack of variation in the topics available to study. Further, research that is accorded recognition through SNI and, until recently, government grant mechanisms, has tended to be more fundamental and less focused on solving pressing problems than policymakers would like. In order to encourage more useful research, undersecretaries of the SEP have established grant competitions more focused on issues they see as critical.

144. There are some applied researchers who often work on projects that respond more directly to the needs of practitioners and policymakers. They meet the requirements, terms of reference, and due dates of such policies, thanks to the contractual relationships that are established. However, these specialists lack collective work spaces. Most of their studies do not circulate among the academic community nor are they subject to debate.

4.2. The Capacity to Produce Research

145. Mexico's educational research capacity is insufficient for its needs. As pointed out in Chapter 3, the educational research community is a small one; the ratio of researchers (in the strict sense), to teachers is only .03 percent. There are only limited opportunities to pursue postgraduate studies, especially in doctoral courses that are recognised for quality. Most of the researchers are concentrated in the metropolitan area, despite the decentralised educational framework that vests critical responsibilities in the states. Few researchers are able to undertake the kind of large-scale quantitative studies the country needs, particularly as it tries to establish how decentralisation has affected quality and equity across the states. The value assigned to evaluation, and the creation of the Instituto Nacional de Evaluación Educativa (INEE), generated databases that call for interpretation. This opens a large source for the development of research work in which teams with greater experience can collaborate with others who are just beginning their careers in educational research.

146. Mexican educational researchers are aging, with the average age over 50, and it is not clear that a new generation, especially one more capable of undertaking the large-scale and more applied work required, is being produced. Finally, the research community is not sufficiently articulated. Scholars working on different problems and in different types of institutions do not interact sufficiently; in fact, their traditions may cause them to disdain types of research other than their own. Although Mexico's COMIE is, in the view of the study team, one of the most interesting and successful efforts to draw researchers together and to compile research syntheses across a large variety of studies, the country still has several research factions, each working in isolation and pursuing different interests and approaches.

4.3. Funding for Educational Research

147. The lack of capacity certainly reflects underinvestment. As noted in Chapter 3, only a very small portion of funding provided by CONACyT goes to educational research. Although the federal undersecretaries have established research funds (in which CONACyT will share) to support research more targeted to their needs, to date these funds seem not to match the great need for educational R&D for informing practice and policy in Mexico. Clearly more investment is needed; both in programmes for the preparation of researchers and in the support of research itself.

4.4. Use of Research by Policymakers

148. The review team was extremely positively impressed by the interest in research among federal officials. Most SEP leadership, including staff in the sub-ministries, have research backgrounds. They come from universities or research centres and a number were university academics prior to entering into government. They are anxious to see research on key issues conducted and have mechanisms for incorporating research into policy and materials development. As an example of research use, a new national exam for graduates of normal schools will be established following a study pointing out the limited role of academic credentials in teacher hiring decisions. In another example, the Federal District serving Mexico City is amassing data about school and student performance. It is very interested in analyses of these data and will support such work in a variety of ways. In this context, the limited capacity in Mexico for undertaking research is even more distressing. A willing audience waits at the federal level; the challenge will be for that audience to invest more in research capacity so it can have the studies it desires.

149. In contrast, only a handful of states ministries have shown interest in research. If the use of research by policymakers is to be encouraged, incentives will have to be provided to the states to commission and use research.

4.5. Use of Research by Practitioners

150. The relationship between research and practice is problematic in every country. In Mexico, the relative lack of practice-relevant research is one factor limiting use. There is also a need for high quality journals that link dissemination of research reviews and best practices.

151. A particular challenge is the lack of demand for research on the part of teachers. Teachers are not trained in research-rich environments and have little exposure to research as a consequence. Not only are they busy, with many working two jobs, but it is not clear that they would be rewarded for using research to improve practice. The conditions and tools of their jobs are specified by government and/or state policies and labour contracts; they would need more flexibility to be able to benefit from using research to change their practice. Supervisors do not have an improvement mission; their goal is primarily to ensure compliance.

5. RECOMMENDATIONS FOR MEXICO'S EDUCATIONAL R&D SYSTEM

152. The review team is very encouraged by the support for educational research among the SEP leadership. It feels, therefore, that recommendations for improving research capacity and focus and for enhancing its use will be welcome. Three main initiatives could be taken: 1) a national research strategy; 2) enhancement of research capacity and infrastructure; and 3) strengthening the use of educational R&D.

5.1. A national research strategy

153. To encourage greater focus on Mexico's educational challenges, the country needs a *national research agenda*, with specific priorities that reflect its needs. It would be best if such an agenda was set by cooperation among researchers and users, perhaps through the establishment of a National Forum representing key stakeholders, such as exists in England. The Forum could meet regularly to discuss research needs, commission assessments of the state of research and the critical gaps, and promulgate priority statements intended to guide the action of funding agencies, universities and individual researchers. Not only would the Forum help shift the focus of research in ways that would benefit the educational system, it could also serve to ameliorate the factionalism that characterises the research establishment.

Who could take the initiative for organising the Forum?

154. The Forum would bring together the producers, intermediaries, and users of research, with the task of defining an agenda of research priorities.

155. The Forum would be initiated and established by SEP and CONACyT. Furthermore, the COMIE, the National Pedagogical University and the Citizen's Education Watch Group could be three important actors in the origin and development of this initiative. These actors represent researchers, teacher trainers, and that of those who act as facilitators or intermediaries in the use of research for decision making. In quantitative terms, they include a vast number of researchers and research user types. They also have the capacity of drawing other institutions and sectors to the forum. Its first task must be that of defining an agenda of research priorities.

156. It is very important for this initiative to be backed by the Federal Board of Education, SEP and the National Commission of Science and Technology (CONACyT).

Who may become members of the Forum?

157. As described in this report, the field of educational research in Mexico is very heterogeneous. It is important for all the actors in the field to take part in a Forum of this type, which can thus become a space for building bridges and relationships among different actors and institutions.

158. Drawing on the experience of the Forum established in England, three types of key actors would be included in the Forum: research users, providers and intermediaries. Many organisations undertake more than one function e.g. they may be both a user and a provider of research, etc. We also suggest bodies

representing the key actors in the Mexican educational R&D system (e.g. COMIE, ANUIES) should be included.

159. It is very important that the actors “appointed” as members of the Forum do not represent specific interests but are “appointed” in their personal capacity. Furthermore, it is important that the chair of the Forum is a well-respected person, not necessarily with an educational research background. In the following table, we suggest some potential actors for the Forum, showing their typical roles in the research process and giving specific examples.

Table 4. Proposition for a Forum of Educational Research: actors, roles in the research process and examples of actors

Actors	Roles in the Research Process	Examples
Research Providers	Organisations, which carry out research and development and research training.	Universities (Departments, institutes and centres linked to educational research) Public and Private Research Centres Board of Public Education (study and research areas) National Institute of Evaluation
Intermediaries	Funders, publishers and the media	Funding Agencies, Magazines, the media Citizen's Education Watch Group Association
Research users	Institutions and actors which use research and evidence to inform their policy or practice	Decision makers (federal and state) and politicians, parents, teachers, students
Coordinators	Coordination bodies at the federal or sectoral level or by field of work.	ANUIES COMIE National Teachers' Union (SNTE) Thematic information networks Networks and associations belonging to centres and institutions.

5.2. Enhancement of research capacity and infrastructure

160. An agenda is only part of a research strategy. Mexico also needs a *plan for enhancing its research capacity and infrastructure*. With the Forum as an advisory group, the SEP should establish a plan to achieve the following goals:

161. Enhancing the number and quality of research training programmes, particularly at the doctoral level:

- Universities should be subsidised to expand their research preparation programmes and fellowships should be provided for students.
- It is very important to promote collaboration between post graduate programmes (for instance, through national and international academic exchanges). Mexico must strengthen collaboration between national training and research centres and international centres of high prestige and interest for the country (for example: scholarship programmes for stays abroad and academic exchange).

- Doctoral training must be carried out in an environment of research. It is desirable for the universities in charge of doctoral training to have project funds available through competitive processes.
- New positions must be created of new positions for junior researchers. Extra consideration should be given to proposals that include junior researchers in research projects; postdoctoral fellowships should be supported.
- Research work must be promoted as an essential part of academic activity. In higher education, only 30% of the academics work full time and most of them devote part of their time to research.

162. Assuring more funding for research:

- Existing research funding competitions should be significantly expanded and new ones established so that key priorities are addressed.
- Enhancing the capacity for research and promoting research competition in the states. The federal government should provide special subsidies to support research leaders – those who can commission and help their colleagues use research – in the states, and give the states matching money to establish research grant competitions.

163. Encouraging collaborative research to help address factionalism and spur cross-institutional capacity-building:

- Improving recognition of quality. The SEP and CONACyT should assess the SNI and other quality control mechanisms to assure that the criteria are inclusive enough to support a problem-focused research agenda. It should also provide rewards for recognising and encouraging quality research in key priority areas and research by young researchers;
- The SEP could establish mission-specific research centres that involve a variety of institutions, including NGOs and teacher training colleges as well as universities, especially consortia that involve regional institutions in various states. These centres would undertake large-scale projects and develop constituents around their missions, such as mathematics education or secondary school education. Constituents would include potential users, thus encouraging research utilisation, and researchers in the same area, thus encouraging the development of networks.
- It is necessary to promote the training of professionals, specialising in policy analysis, who are familiar with the research methods employed in social science for the analysis of educational issues and the design of solution options for specific contexts. The profile of such professionals must be closer to that of a “symbolic analyst” as defined in the job description classifications made by Robert Reich than to that of a classic academic researcher. This type of specialist generates knowledge characterised by: (a) its close link to the contexts in which it will be applied; (b) its interdisciplinary nature (governed more by the issue than by the discipline); and (c) the fact that it is produced by and spread among a broad and diverse type of organisation, thus enhancing its “social accountability” factor by being closely tied to issues of high public sensitivity.

5.3. Strengthen the use of educational R&D

164. Mexico also needs strategies to enhance research use:

- In addition to establishing and funding an agenda focused on critical problems, the SEP can make efforts to enhance the use of research by teachers. Teacher training could incorporate curricula on evidence use, educating prospective teachers about different types of research and standards of quality as well as about the use of educational data. The National Pedagogical University, founded 25 years ago with the purpose of training faculty and educational researchers for work in teacher training colleges, must also change its approaches. It can enter agreements with renowned research centres to build bridges between institutions that have, hitherto, been separate.
- Enhancing the teachers' understanding of evidence must also be a focus for continuing professional development over time. In addition, school-based programmes could encourage research use, making relevant studies available to schools as they plan their improvements. Finally, the system will, over time, need to address whether the working conditions of teachers and the role of supervisors support improvement of practice and therefore make research relevant for teachers.
- The use of research both by those who conduct it as well as by those who employ or benefit from it (teachers, parents, decision makers, etc.) does not only rest on disseminating the information effectively. It is necessary to create different spaces and bridges that act as intermediaries ("brokers" or middlemen), spreading the knowledge generated in different contexts so that they can play a relevant role in decisions made by parents, teachers, and school principals or authorities. In these spaces – be they real or virtual – the large body of fragmented information to which different educational players usually have access is discussed, thus assigning sense and meaning to it. These spaces operate as networks, seminars, conferences, and publications or in any other form that allows information to be discussed and processed, transforming it into the type of knowledge that constitutes meaning for the actors.

165. Strategies to enhance dissemination:

- Research policies could include more vehicles for dissemination of research, such as briefs and websites. Special funds could be made available to generate such mechanisms and researchers could be required to attend to dissemination as a condition of receiving research funding.
- Databases containing information on educational research outcomes should be coordinated. There are different networks in the country, with members from different communities and educational research institutions. For example, there are networks of educational mathematics, educational ethnography; and education and employment among others. All of these networks gather information on educational research and collaborate in the production of state-of-the-art knowledge statements in their fields of work. The generation of an educational research portal in Mexico might be envisaged, which will include information and links to the different networks of research, links to databases relevant for educational research, and a directory of educational research institutions, and ongoing projects etc.

166. A coordinated long-term national research strategy in education shared by practitioners, policy makers and researchers to address priorities, the enhancement of research capacity and infrastructure, and to strengthen the use of educational R&D, is crucial for building a better knowledge base for improving the quality of educational practice and policy in Mexico. We believe that if these recommendations were implemented, many of the problems identified would be overcome.

BIBLIOGRAPHY

- Álvarez, J. (2003). Escuelas de calidad dos años después. *Revista Mexicana de Educación*. 100, pp.22-24
- ANUIES (2000). Estadísticas de la Educación Superior, 2000. Población escolar de Posgrado.
www.anuies.mx
- Arredondo, M, *et al.* (1984). La investigación educativa en México. Un campo científico en proceso de constitución. *Revista Mexicana de Sociología*. 46(1), pp. 25-41
- Arrien, J.B. (1998). La Educación y la Reforma de la Educación en Centro América. Managua, Universidad Centro Americana (UCA)- PREAL.
- CENEVAL (2003). Boletín. October December 2003. N° 3. www.ceneval.ed.mx
- Colina, A and Osorio, R (2003). Los agentes de la investigación educativa en México. In: Weiss, E. (coord.) *El campo de la investigación educativa*. 1993-2001, pp.97-120. Mexico, COMIE-SEP-CESU
- COMIE (2003). La investigación Educativa en México: usos y coordinación. Mexico, July 2003
- CONAFE, Information on compensatory programmes
- Díaz Barriga, A. (1998). *La investigación en educación. Su conformación y retos*. Unpublished document. Mexico: UNAM
- Didou, S. et al. (2000). *Evaluación de las políticas de Educación Media Superior y Superior en el sector tecnológico federal*. Mexico: SEP
- ECLAC (2002). *Mujer rural, escolaridad y empleo en el istmo centroamericano. (Hacia una identificación de áreas prioritarias de políticas públicas)*. ECLAC. LC/MEX/L.514, 26 February 2002
- ECLAC, UNICEF, SECIB (2001). *Construir equidad desde la infancia y la adolescencia en ibero-américa*. Santiago, LC/G2144/P September.
- Gonzalez A, R. (1995). La educación tecnológica y la formación para el trabajo. In: Fundación para la cultura del maestro. *Educación fin de siglo. Memoria del seminario de análisis sobre política educativa nacional*. pp. 85-97. Mexico: FCM.
- Gutiérrez, N. (1999). Los orígenes de la institucionalización de la investigación educativa en México. Mexico: DIE-CINESTAV.
- Ibarrola, M. de (1992). Los efectos desnaturalizados del SNI. *Avance y Perspectivas*, vol. 11, pp. 243-245.

- Ibarrola, M. de (2003). Reflexiones sobre una propuesta integral para conocer la investigación educativa nacional. In E. Weiss, E. (Coord.), *El campo de la investigación educativa*. 1993-2002, pp. 673-694. Mexico: COMIE.
- Ibarrola, M. de, Silva G. and Castelan, A. (1997). *Quiénes son nuestros profesores*. Fundación SNTE para la cultura del Maestro Mexicano, Mexico, 1997
- Latapí, P. (1981). Diagnóstico de la investigación educativa en México. *Perfiles Educativos*, 14, pp. 33-50.
- Latapí, P. (1994). *La investigación educativa en México*. Mexico: Fondo de Cultura Económica.
- Latapí, P. (2003). Algunas reflexiones sobre el desarrollo de la investigación educativa. In E. Weiss (Coord.), *El campo de la investigación educativa*. 1993-2002, pp. 669-679. Mexico: COMIE.
- Martínez Rizo, F. (2002). Nueva visita al país de la desigualdad. La distribución de la escolaridad en México, 1970-2000. *Revista Mexicana de Investigación Educativa*, 7(16), pp. 415-443.
- Martínez Rizo, F. (1996). La investigación educativa en México en el contexto Latinoamericano. In G. de Landsheere (ed.), *La investigación educativa en el mundo. Con un capítulo especial sobre México*, pp. 347-372. Mexico: Fondo de Cultura Económica.
- Maya, O. and Zanteneo, E. (2003). “Las escuelas normales: espacios de tensión y controversia”. En: Educación 2001, año IX, N° 100, 2003 pp.29-38
- Muñoz, O. (2000). “The Schooling situation of children in highly underprivileged rural localities in México”. In Reimers, F. (ed), 2000 *Unequal schools, unequal chances*. Cambridge, David Rockefeller Center for Latin American Studies. pp. 291-314
- Muñoz Izquierdo, C. and Ahuja, R. (2002). Función y evaluación de un programa compensatorio para escuelas primarias de los estados mexicanos más pobres: Guerrero, Hidalgo and Oaxaca. In: Reimers, F.(coord.) (2002). *Distintas Escuelas, Diferentes oportunidades*. Madrid, Ed. La Muralla., pp. 501-544.
- Observatorio ciudadano de la Educación (2000). Comunicado N° 44 El rezago educativo. 23 November 2000.
- Observatorio ciudadano de la Educación de la Educación (2000). Comunicado N° 45. 8 December 2000.
- Observatorio ciudadano de la Educación (2001). Comunicado No. 51.
- OECD (1995). “Educational Research and Development: Trends Issues and Challenges”, Paris
- OECD (2003a). “OECD Economic Surveys: Mexico”, Paris
- OECD (2003b). “New Challenges for Educational Research”, Paris
- Ramírez, R. (2000). Por una nueva escuela pública. En Transformar nuestra escuela, México, Year 3, N° 5 April 2000, pp. 6-13
- Reimers, F.(coord.) (2002). *Distintas Escuelas, Diferentes oportunidades*. Madrid, Ed. La Muralla.

- SEDESOL (2001). Evaluación de resultados del Programa PROGRESA, 2001.
- SEP (1992). National Agreement on the Modernisation of Basic Education. Document signed and presented on 18 May 1992. Mexico, 1992.
- SEP (1995). *Programa de Desarrollo Educativo 1995-2000*. Mexico: SEP.
- SEP (1999), *Perfil de la Educación en México*. México: SEP.
- SEP (2001). Programa Escuelas de Calidad. Propuesta de documento para difusión. Mexico D.F., May 2001
- SEP (2001). Plan Nacional de Educación 2001-2006. Mexico, 2001.
- SEP (2002). National Agreement on the Modernisation of Basic Education. Document signed and presented on 18 May 1992. Mexico, 1992.
- SEP (2003). El Sistema Educativo de los Estados Unidos Mexicanos. Ciclo escolar 2002-2003. Mexico, DF, 2003
- UNESCO (1998). Laboratorio latinoamericano de evaluación de la calidad de la Educación. Primer Estudio Internacional Comparativo. UNESCO-Santiago, 1998.
- UNESCO, 2001: Situación Educativa Latin America y el Caribe 1980-2000. Santiago.
- Weiss, E. (Coord.) (2003). *El campo de la investigación educativa. 1993-2002*. Mexico: COMIE.
- Weiss, E. and Maggi, R. (1997). *Síntesis y perspectivas de las investigaciones sobre educación en México (1982-1992)*. Mexico, COMIE.
- Winkler, D, (2002). La educación de los pobres en Latinoamérica y el caribe. Ejemplos de educación compensatoria. In: Reimers, F.(coord.) (2002). *Distintas Escuelas, Diferentes oportunidades*. Madrid, Ed. La Muralla. pp.199-232