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Tools for Public Policies: Lessons from the Mexican School Census and other Sources

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Lessons from the Mexican School Census and other Sources**

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Resumen

This study analyses some of CEMABE's main results, in particular those related to the infrastructure of schools, educational background of teachers and sociodemographic characteristics of students. It examines these findings in the light of other sources of information, such as public spending on education and Mexican students' performance in PISA tests. These data sources provide a panorama of the situation of Mexico's basic education, the study discusses some of the challenges that can be identified from them and reflects on possible measures to address them. By analysing the situation of the national education system, the study aims to contribute to the discussion of what affects social mobility in the country and how to improve it.

Palabras clave: Censo de Escuelas, Maestros y Alumnos de Educación Básica y Especial (CEMABE), educación, movilidad social, México

¹ This work has been done under the responsibility of the authors. The opinions expressed and arguments employed herein are solely those of the authors and do not necessarily reflect the official views of Mexican National Institute of Statistics and Geography (INEGI).

“The moment for an Education Reform has come. A nation builds its development on education. Human capital is the basis for the development and progress of any country; and for this reason the State is responsible for the education policy. [...] *I have instructed the Minister of Public Education to request INEGI to carry out a census of schools, teachers and students. This information, which currently we do not have, will be the necessary data base to achieve a more efficient and transparent operation of the education system in our country.*”

Enrique Peña Nieto’s first address as President of Mexico, December 1st, 2012.
(Fragment)²

I.- Introduction

In December 2012, the Mexican federal government sent to the National Congress a proposal for an Education Reform aimed both at improving the quality of the country’s national education system (SEN, for its initials in Spanish) and overhauling its administration by reasserting the power of the State in what had become a union-dominated sector.

There is no doubt that Mexico’s educational system was in need of reform. During the last decades, the country has considerably increased enrolment rates –particularly in primary and lower secondary education–, however there are still a significant proportion of failed students and low completion rates in upper education levels. Mexican students’ performance in tests administered by the Programme for International Student Assessment (PISA), which measures the knowledge and skills in mathematics, reading and science of 15 year-olds around the world, is significantly below the international average. In the 2012 PISA examination, Mexico placed 53rd out of 65 countries assessed, and had the lowest performance among the 34 OECD’s member countries. All of these makes evident that Mexico’s SEN is failing to adequately prepare students since their first levels of education, a problem which not only affects their possibilities and success in moving along the academic track (Garcia, 2014), but that may seriously determine their future competitiveness and professional development.

Among the various aspects of the reform, the National Institute of Statistics and Geography of Mexico (INEGI) was assigned to carry out a National Census of Schools, Teachers and Students of Basic and Special Education (CEMABE, its acronym in Spanish) in order to provide the federal government with complete and useful data to operate the SEN. It may sound surreal –or at least extraordinary–, but in Mexico neither the government nor the civil society knew the exact number of teachers working in public schools (and, consequently, being paid with public resources). It was widely recognized that the administrative records available were lacking important information on some of the characteristics of the SEN, besides being not always up to date. The official figures they provided –especially regarding the number of teachers and their functions– were not

² Authors’ translation and emphasis.

trusted by the public nor even by the officials in charge of the educational system; and hence undertaking a national census of schools, teachers and students was considered of crucial importance, in fact indispensable, for the implementation of the education reform.

In 2013, in the middle of a complex political environment –heightened by the teachers’ union opposition against the reform and the census–, INEGI carried out the task. This chapter analyses some of CEMABE’s main results, in particular those related to the infrastructure of schools, educational background of teachers and sociodemographic characteristics of students. It examines these findings in the light of other sources of information, such as public spending on education and Mexican students’ performance in PISA tests. These data sources provide a panorama of the situation of Mexico’s basic education, the chapter discusses some of the challenges that can be identified from them and reflects on possible measures to address them.

Although not directly focused on the examination of the social mobility phenomenon in the country, the analysis shows that –education being a key element for individuals to achieve their full potential, participate in the labour market and foster their personal and social development–, to have useful information on which to base decisions towards the improvement of the educational system is critical for the design and evaluation of public policies on education, but also for those ultimately addressing social mobility in Mexico. By analysing the situation of the national education system, the chapter aims to contribute to the discussion of what affects social mobility in the country and how to improve it.

II.- The Education Reform and the Schools Census

The education reform was the first major measure passed by the government of Mexico’s president Enrique Peña Nieto (EPN) as part of the Pact for Mexico, an agreement signed by him and the representatives of the three main political parties in the country on December 2, 2012 –a day after he assumed office. The main purpose of the Pact was to create consensus among the different political forces in order to promote the advancement in the Legislative of reforms and initiatives on relevant subjects (such as telecommunications, energy, education, etc.) which in some of these cases had been previously hindered by a lack of agreement as a result of political gridlock.

The proposal for education reform was sent by the executive to the National Congress on December 10, 2012, which approved it in the same month (December 21) and –after being ratified by the required majority of State Congresses– was signed into law by the president on February 25, 2013. The reform’s primary objectives are 1) to increase the quality of basic education in the country –an improvement expected to be reflected in international evaluations, such as PISA–, 2) raise enrolment rates and the quality of upper secondary and tertiary education, and 3) return control of the SEN back to the State (Pacto por Mexico, 2012). It is aimed to strengthen the authority of the federal government over the education policy and the management of the education system, as

well as to reduce the teachers unions' control over the hiring and evaluation of teachers, practices that were widely criticized for their corruption and lack of transparency.

Among other aspects, the reform grants autonomy and strengthens the functions of the National Institute for the Evaluation of Education (INEE), which is in charge of coordinating the National System of Education Evaluation and promoting standards for the improvement of education. It institutionalizes the Professional Teaching Service and establishes merit-based evaluations for teacher hiring, promotion and permanence in public schools. It also gives schools more autonomy in administrative decisions, constitutes the School Technical Assistance System, and establishes an official 6-to-8 hour school day. Finally, to assist in the implementation of these changes, the reform determined to create a System of Information and Education Management (SIGED, its acronym in Spanish) and, as it has been mentioned, assigned INEGI to conduct a national census of schools, teachers and students in order to provide the federal government with complete and relevant data, which could support both SIGED and the operation of SEN (DOF, 2013).

The Ministry of Education (SEP, its acronym in Spanish) collects periodically information on elements of the Mexican education system. It does so through a statistical form (Formato 911) that each academic year schools have to fill out and which provides general data of their students and teachers. As this information does not allow to identify individual characteristics of the education personnel and student populations, SEP complements it with the National Registry of Teachers, Schools and Students (RNAME), a database built with information from its administrative records. Although important sources of information in themselves, it was reckoned that these statistical efforts were not complete and lacked important data on some elements of the SEN, such as infrastructure of the schools and sociodemographic characteristics of students and teachers.

The official figures of teachers actually teaching in public schools that these data sources provided were questionable. Due to long and well known practices of control in teacher hiring and promotion by the National Union of Education Workers (SNTE in Spanish) and the National Coordinating Committee of Education Workers (CNTE)³, it was not possible to know the exact number of teachers on payroll that were in fact teaching in public schools, have more than one function, work in other educational institutions or perform union's functions or political activities. To carry out a census that could provide comprehensive and complete information was hence indispensable for the implementation of the reform, as well as for the design of subsequent national public policies on education. In this sense, the census was going to perform a function not

³ SNTE is a national union organization comprised of workers of the Mexican public education system (teachers of basic education, school directors, support and administrative personnel, etc.). In 2013 according to its own registries it had more than 1.6 million members and is currently the largest union in Latin America (OPTISNTE, 2013). CNTE is a militant organization of teachers nominally within the SNTE, but which functions as a political separate group in confrontation with SNTE's leaders. As it does not publish any figures on its membership there is no reliable figure. Some sources have calculated approximately around 100,000 members (Excelsior, 2015).

normally reserved for this type of statistical exercises, that of auditing the existing SEP statistics and ultimately the actual work of teachers.

As the institution charged in the country with the responsibility of providing society with quality information on relevant social and economic phenomena, useful for the design, implementation and evaluation of public policies, INEGI –an autonomous agency since 2008– was assigned to perform this task. Despite the opposition of some sectors of the teachers' union (especially the CNTE) towards the education reform and the collection of information through the census, INEGI carried out –from September 26 to November 29, 2013– the first national census of schools, teachers and students in Mexico.

CEMABE's target population were all the schools and workplaces of basic (pre-primary, primary and lower secondary) and special education of the country. Among many other elements, it collected information on their infrastructure, services, resources and equipment, as well as on the number, sociodemographic characteristics, educational level, etc. of their students and teachers. All the census data is geo-referenced and it can be analysed not only at the national, state and municipal levels, but also by school through a digital tool available at INEGI's website called Atlas Educativo (INEGI, 2014b). This tool allows to examine the information of each of the educational centers censused (including photographs of schools' premises) and combine it with other relevant economic, social and demographic data (such as educational level of the population, social development of the region, economic units related to education activities, public services and utilities, etc.). On the whole, CEMABE's results and the Atlas Educativo allow to explore and compare in a richer way a wealth of information on the Mexican SEN that until then were neither so comprehensive nor available in the same platform. Its importance for any analysis of social mobility in the country cannot be overstated.

To conduct the census, INEGI worked in close coordination with SEP and its local offices in the 32 federal entities of the country, which –among other things– provided the Institute with invaluable support when convoking the participation and cooperation of schools and teachers to the census. In a sense, the undertaking of CEMABE can be seen as an audit process. The census used as a basis the data on schools, teachers and students available both in SEP's registries (Formato 911 and RNAME) and in the states' administrative records. Throughout the process of carrying it out, this information was verified and provided back to SEP, discrepancies between the administrative data and the census-collected information identified, and the statistical figures on education updated.

The next section analyses some of CEMABE's main results.

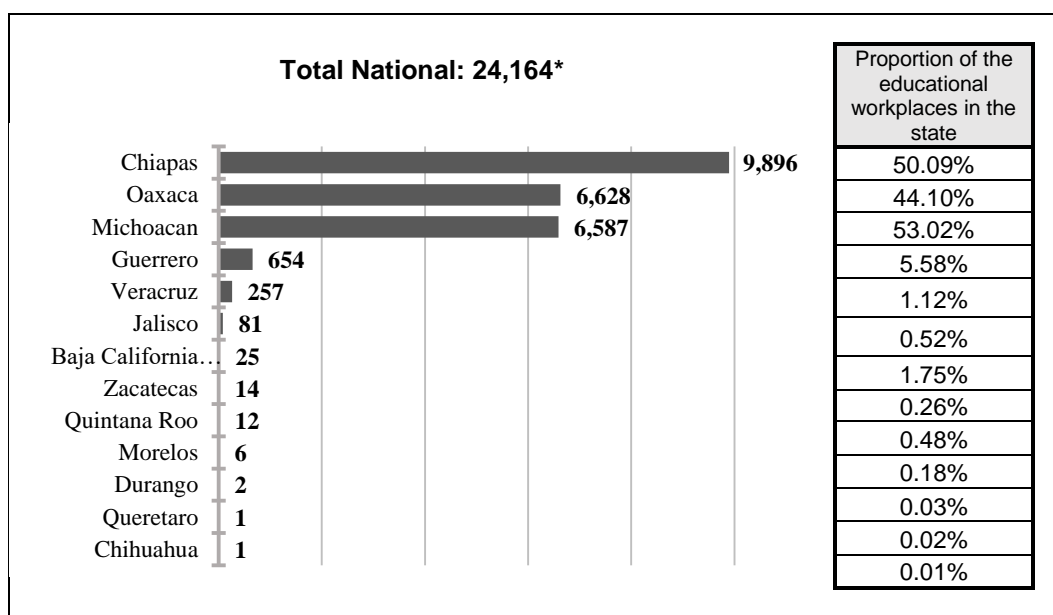
III.- The Schools Census' Main Results

Due to the huge amount of information provided by the census, only some of its main results are examined here. We encourage the reader to visit INEGI's official website to get a more comprehensive and detailed view of these. As the institution legally responsible in Mexico for providing official statistics, INEGI is in charge of collecting,

producing and divulging this data as an input for public policies, the thorough analysis of what the results imply, their causes and consequences, etc. ultimately has to be made by decision makers, academics, students and the society in general, i.e. the users for whom the information is produced.

Before analysing the particular characteristics of Mexican schools, it is worth mentioning that according to SEP’s administrative records in 2013 there were 261,631 workplaces of basic and special education in Mexico (these include schools, units of support to education services, administrative offices, etc.). Of these educational workplaces 90.6% (236, 973) were censused, 9.2% (24,164) refused to answer the census and 0.2% (494) were not censused because either they were not found⁴ (426) or it was not possible to access to them due to different operative reasons (68). Regarding the 24,164 workplaces that refused to answer the census, the great majority of them (95.6%) were concentrated in three Mexican states (Chiapas, Oaxaca and Michoacan), where the opposition of the CNTE to the reform –and hence to collaborate on the census– was more intense (see Graph 1). Without counting these states, the census had a response rate of 99.6% in the rest of the country.

GRAPH 1
EDUCATIONAL WORKPLACES THAT REFUSED TO ANSWER THE CENSUS



Source: INEGI, 2014a.

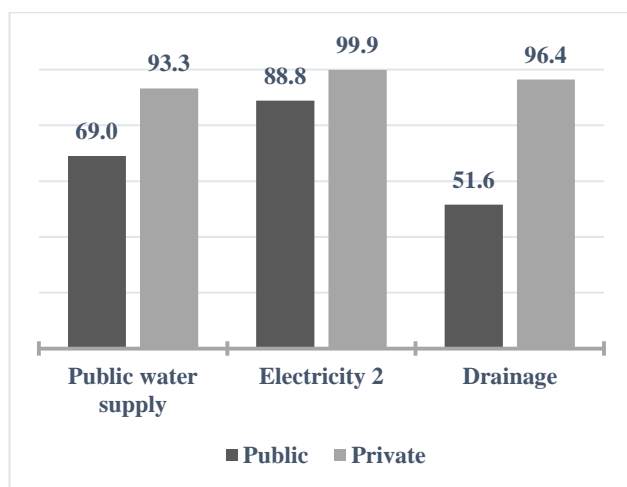
Note: *Of these, 21,757 were schools of basic education.

In total, 207,682 schools of basic education (pre-primary, primary, lower secondary and Centres of Multiple Education) were censused through CEMABE. The great majority of them (86.4%) are public institutions and only 13.6% are private schools. When analysing their characteristics, it stands out that there is a considerable number of

⁴ Workplaces whose information in SEP’s administrative records was not updated after they were closed or relocated.

schools, particularly of those set by the government and funded with public resources, which lack basic infrastructure and equipment. As graph 2 shows, more than 10% of public schools in Mexico still do not have any source or supply of electricity, just 69% have access to public water supply and only half (51.6%) have a drainage system. The conditions of private schools are much better, particularly regarding the access to public water supply and drainage, partly explained because of their location mainly in urban and highly populated areas. Moreover, there are also many schools in the country that lack indispensable equipment and utilities for teaching. Unbelievable as it may seem, in Mexico no more than 85.3% of schools have students' sitting furniture in all their classrooms, only 79.7% have desks for all their teachers and 9.1% still lack writing boards (see Graph 3).

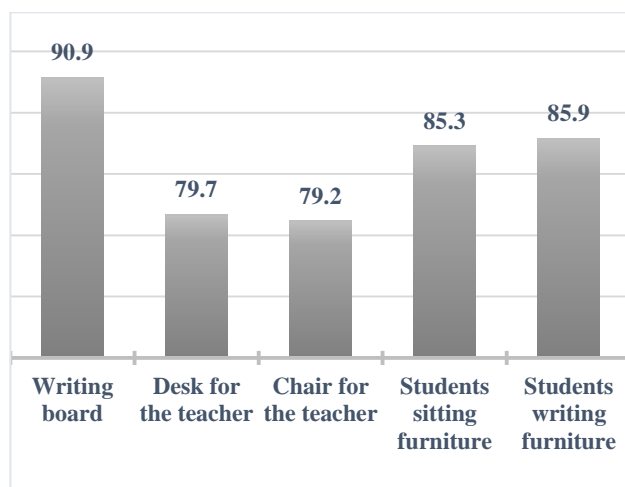
GRAPH 2
PROPORTION OF SCHOOLS WITH BASIC SERVICES, BY TYPE OF INSTITUTION¹



Source: INEGI, 2014a.

Notes: ¹It does not include mobile schools and schools without construction. / ²It involves public electricity supply, privately own power stations, solar panels, etc.

GRAPH 3
PROPORTION OF SCHOOLS WITH BASIC EQUIPMENT FOR TEACHING IN ALL THEIR CLASSROOMS¹

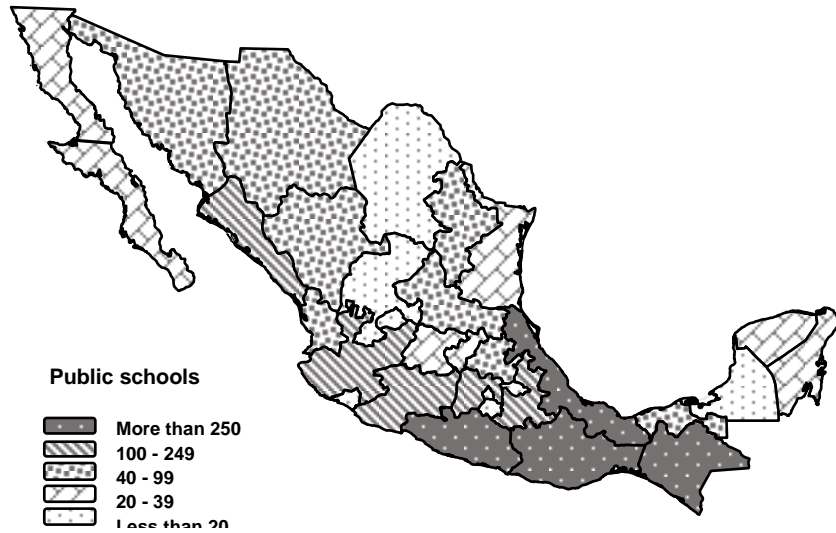


Source: INEGI, 2014a

Note: ¹It does not include mobile schools and schools without construction.

Mexico is a very heterogeneous country with both developed and urbanized cities, as well as very poor and dispersed communities. As Figure 1 indicates, there is still a considerable number of public schools lacking infrastructure or made of lightweight and precarious materials all throughout the country. However, states –such as Chiapas, Oaxaca, Guerrero and Veracruz–, are the ones which, due to their level of development, concentrate the greatest number.

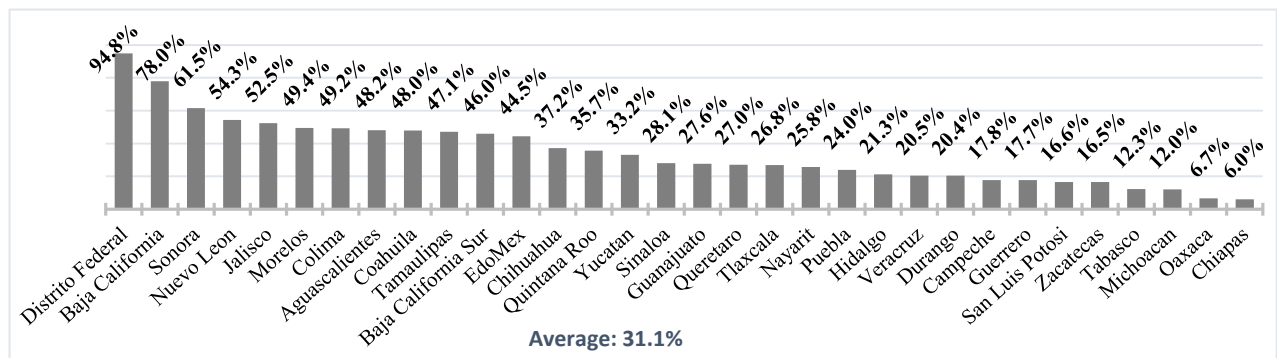
FIGURE 1
PUBLIC SCHOOLS MADE OF LIGHTWEIGHT & PRECARIOUS MATERIALS OR WITHOUT CONSTRUCTION (BY STATE)



Source: INEGI, 2014a

The huge heterogeneity in the conditions and equipment of Mexican schools can also be observed in an increasingly relevant element for education: the access to the Internet. In the country, there are entities such as the Distrito Federal and Baja California where most of public schools (95% and 78%, respectively) have access to Internet, but also entities like Chiapas and Oaxaca where the proportion of public schools with access to this service does not even reach 7%.

GRAPH 4
PUBLIC SCHOOLS WITH ACCESS TO INTERNET (BY STATE)



Source: INEGI, 2014a.

Hence, the Mexican government faces the huge challenge of balancing the infrastructure, resources and equipment conditions of public schools if it wants to provide all students in the country with the same opportunity for accessing a quality education. Through CEMABE it is possible to identify the insufficiently equipped schools and their main necessities. It is a useful tool that can help to efficiently develop this task, as it

provides comparable information (and even pictures) of each of the schools in Mexico on these and many other relevant facts⁵. As it has been mentioned, they are a very useful tool for the study of social mobility in the country.

In addition to these elements, it is worth mentioning the census' results regarding the number and status of the personnel in educational workplaces, as they shed light on the vacuums of the official administrative records on education available and the relevance of having updated and trustful information not only to implement the reform, but also to keep managing the SEN afterwards. Before analyzing the results, a distinction should be made: the data on personnel refers to job posts and not to people. A person can have one or more job posts in different educational workplaces, and hence he/she is registered as personnel (a job post) in each of them.

Table 1 shows that according to registries in SEP's administrative records (Formato 911 and RNAME), in 2013 there were 2,247,279 job posts (teachers, school directors, administrative employees and other education related workers) registered as personnel in basic and special education workplaces in Mexico (schools, units of support to education services, administrative offices, etc.). Of these, in 1,949,105 cases (86.7%) it was verified through CEMABE that the person officially assigned to the job post was working there, while in 298,174 cases (13.3%) it was found that the person assigned was not actually working in his/her registered workplace. Of these, 113,259 (38%) were working in other educational workplaces (INEGI revised, after censusing these other places, that these personnel were in fact occupying a job position in them); 114,998 (38.5%) were reported by the manager or director of the educational institution as personnel who have already died, quit or retired; 30,695 (10.3%) were on license or commission; and strikingly 39,222 (13.2%) –although recorded as personnel with an officially assigned job post in SEP's administrative records– were not known to either the directors of the educational workplaces where they were registered or to the students' parents.

These last figures reflect serious discrepancies and a lack of updating of SEP's administrative records. Undoubtedly, they were –along with the information on the characteristics of the schools– the census' results that most attracted the attention of the public, the academia and the civil society,⁶ as they provided transparent statistics which allowed to measure and identify for the first time the personnel who are registered in SEP's administrative records, but are actually not performing teaching functions or are working at different education workplaces. Due to their high number, these figures raised the necessity to check if, besides the wrong registry of these cases, there are wrongful payment situations of public personnel working in the SEN. All of CEMABE's results were provided back to SEP, which started the process of carrying out revisions to its administrative records in order to update its statistics on education personnel and committed itself to investigate the people who are getting paid, but are not working or in

⁵ On September 2, 2015 on the occasion of the President Peña Nieto's III Address to the Nation, it was announced the emission of bonds for education infrastructure that should channel 50,000 million pesos for the next three years towards the improvement of education facilities in the country.

⁶ To get a glimpse of some of the media and public opinion articles regarding this matter, see: (The Economist, 2014), (Excelsior, 2014), (El Universal, 2014), (Milenio, 2014) and (Mexicanos Primero, 2014).

some cases nobody seems to know them (Milenio, 2014 and El Universal, 2014). Starting in 2015 SEP has centralized again payments to teachers, concentrating in the ministry the management of the whole national teachers' payroll.

TABLE 1
PERSONNEL IN EDUCATIONAL WORKPLACES,¹ BY EMPLOYMENT STATUS

	Number	%
Total job posts	2,247,279	100%
Job posts with personnel found at the workplace	1, 949,105	86.7%
Censused	1,814,483	93.1%
- With identification	1,723,092	95.0%
- Without identification	91,391	5.0%
Absentees	98,576	5.1%
Refused to provide information	36,046	1.8%
Job Posts without personnel found at the workplace	298,174	13.3%
Work in other workplace	113,259	38.0%
License or commission	30,695	10.3%
Resignation, retirement, pension, death ²	114,998	38.5%
Not known by school directors or parents	39,222	13.2%

Source: INEGI, 2014a.

Note: ¹Personnel in public and private workplaces.

/²Of these, 1 219 were personnel reported as dead.

Regarding the job posts in which it was verified if the personnel were in fact working in their education institutions (1,949,105), a total of 1,128,319 were teaching job posts,⁷ performed by 978,118 teachers (some of them having more than one job post as teachers).

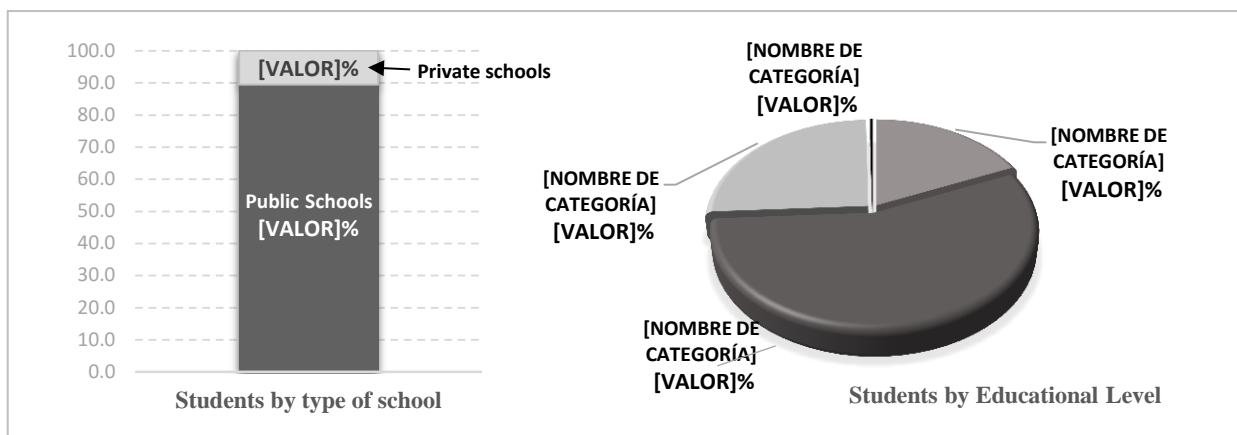
In relation to the characteristics of the students censused (23,562,183), it stands out that most of them (89.5%) are enrolled in public education institutions and only 10.5% are students in private schools. More than half (55.8%) are in primary educational level and a quarter (25.6%) are in lower secondary education (see Graph 5). This reflects where the provision of basic education services currently concentrates and foreshadows even more increasing demands for access to higher educational levels in the future.

With the census it is now also possible to know *–inter alia–* characteristics of the students which give an idea of their accessibility to their schools and some elements of their sociodemographic background. For instance, in Mexico only 2.3% of basic education students get to their educational institution by school transport and 18.5% by car, while the majority usually walks (62.3%) or takes public transportation (10.9%). On average, 78.4% of Mexican students spent less than 30 minutes commuting to their school (see Graph 6), however in the Distrito Federal –Mexico's smallest but most

⁷ It does not include community instructors (36,110) and school directors who, besides their management functions, also give classes to students (69,338).

densely populated entity– 13.2% of students spent 30 minutes to one hour commuting and 2.5% from 1 to 2 hours, while in Puebla –one of the poorest entities of the country, characterised by a difficult topography and by having many dispersed and remote communities– 13.5% of students daily spent 30 minutes to one hour commuting (more than in the Distrito Federal), but only 1.6% spent from 1 to 2 hours (INEGI, 2014a).

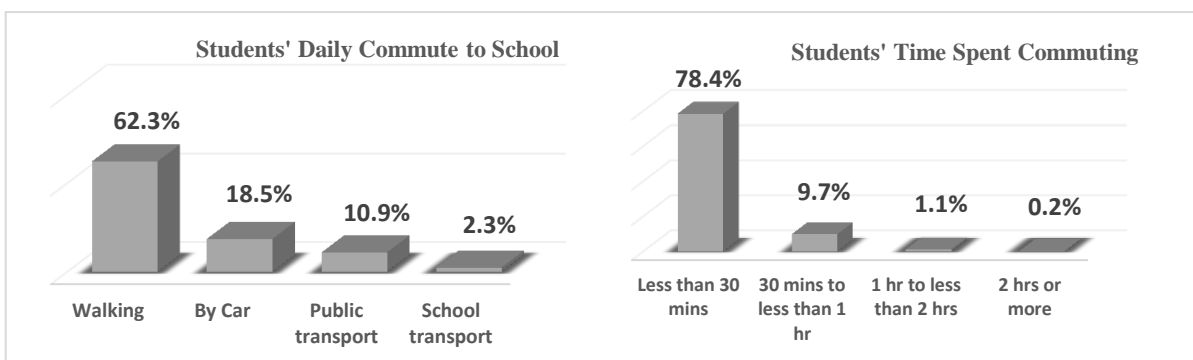
GRAPH 5
STUDENTS IN MEXICAN SCHOOLS,¹ BY EDUCATIONAL LEVEL AND TYPE OF SCHOOL



Source: INEGI, 2014a.

Note: ¹It only refers to students in schools censused./ ²The Centres of Multiple Education are special schools that provide education services for children who have mental and/or physical disabilities, as well as other special education needs.

GRAPH 6
STUDENTS' IN MEXICAN SCHOOLS,¹ BY DAILY COMMUTE AND TIME SPENT COMMUTING



Source: INEGI, 2014a.

Note: ¹It only refers to students in schools censused.

The difference to 100% corresponds to students registered in the census but who did not answer this question.

Although the census was not designed to be an audit process of the SEN per se (as no official documents or performance reports were revised), the undertaking of CEMABE undoubtedly allowed to evaluate the conditions of schools in the country, identify vacuums and discrepancies in SEP's existing statistics on teachers, and collect relevant

data on the socio-demographic characteristics of students. This information is useful for the task of cleaning and updating the lists of public teachers on payroll, planning programs to balance the infrastructure of schools, estimating future necessities of students' access to higher education, etc. On the whole, CEMABE –along with other sources of data on education (like the ones that will be analyzed below) – makes up a consistent basis to evaluate the situation of Mexico's basic education.

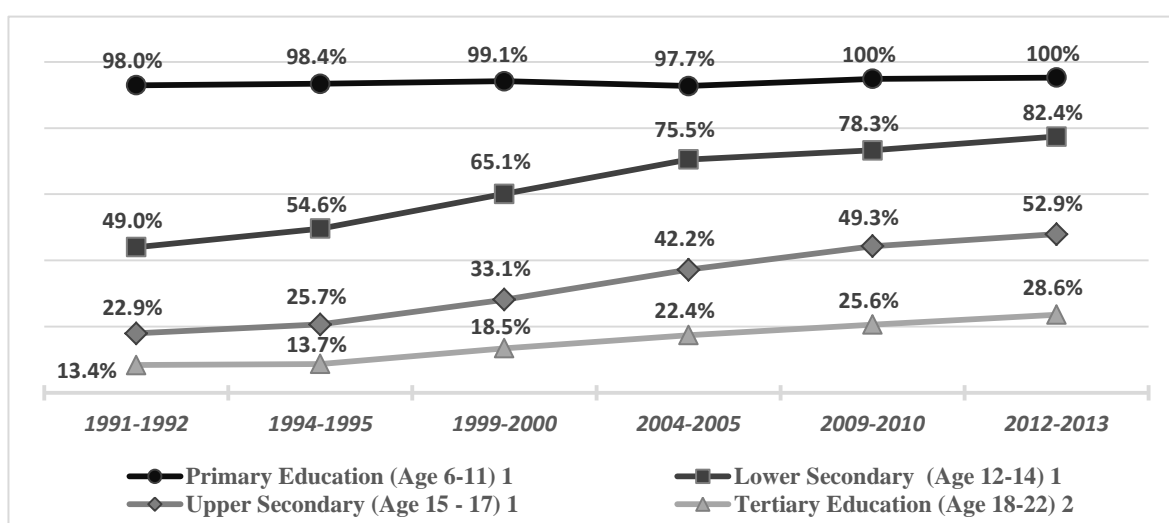
Without the aim of being exhaustive, the next section examines some selected indicators provided both by national and international sources of information which could help us to build a more comprehensive panorama of the status of education in the country. Their analysis allows to identify some of the problems and challenges that affect the Mexican education system and reflect on possible measures to address them.

IV.- The Status of Education in Mexico: Other Sources of Information

a) Enrolment rates and progression indicators

Compulsory education in Mexico involves pre-primary, primary, lower secondary and (since February 2012) upper secondary programmes; and hence the State is responsible for providing access to education for the entire population at these levels. During the last decades, the country has made important efforts to expand the population's participation in education and increase enrolment rates. Today, access to primary education is universal in Mexico and the net enrolment rate to lower secondary education is higher than 80% (see Graph 7). However, the participation of the population in upper secondary and tertiary education is still significantly low. The net enrolment rate in upper secondary education comprise only half (53%) of the population in that school-age and the participation of the population in tertiary education does not even reach 30%.

GRAPH 7
ENROLMENT RATES, BY EDUCATIONAL LEVEL

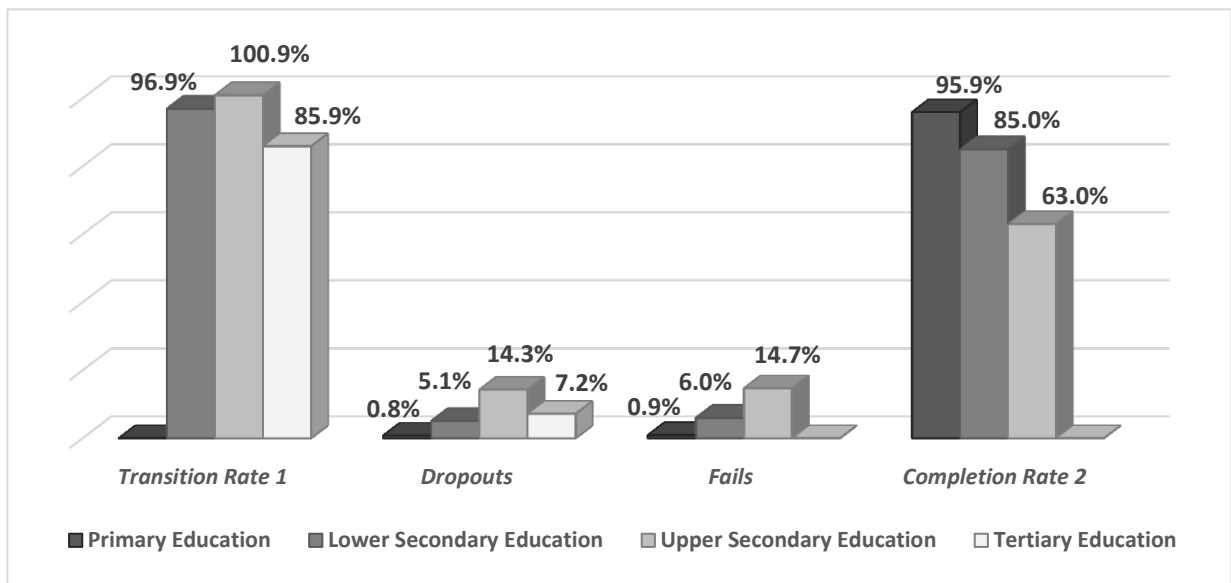


Source: (SIGED, 2015).

Notes: ¹*Net enrolment rate*: Total number of students of a particular age group enrolled in a given level of education, expressed as a percentage of the total population in that age group./ ²*Gross enrolment rate*: Number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to that level of education. For the tertiary level, the population used is the 5-year age group starting from the official secondary school graduation age (18-22 years old).

When analysing the progression and completion in education of Mexican students, it is observed that the proportions of failed pupils and dropouts increase when advancing to higher educational levels, while conversely completion rates decline (see Graph 8). Although many social and economic elements could be related to this situation, particularly to the decision of a student to leave education, the figures on failed students suggest –*inter alia*– that the national education system is not adequately preparing students in moving along the academic track. Mexico’s results in PISA tests provide further evidence which supports this fact.

GRAPH 8
SELECTED INDICATORS OF EDUCATION, BY EDUCATIONAL LEVEL
(School year 2012-2013)



Source: SEP, 2014.

Notes: ¹*Transition Rate*: The number of new entrants to the first grade of an educational level in a given year expressed as a percentage of the students that graduated from the last grade of the previous educational level in the previous year. It measures the probability that a pupil in the last grade of an educational level makes the transition to the next. The reinsertion into education of students from different generational cohorts may affect transition rates. This manifests in figures above 100%. / ²*Completion rate*: Total number of students completing (or graduating from) an educational level in a given school year, expressed as a percentage of the initial cohort of students that enrolled in that educational level.

b) PISA Results

The Programme for International Student Assessment (PISA) is a triennial survey conducted by the Organisation for Economic Cooperation and Development (OECD)

since 2000, which assesses the knowledge and skills on mathematics, reading and science of 15-year-olds around the world. It examines not only what students know on these subjects, but also how well they can extrapolate and apply this knowledge to problem solving and other contexts. In each round of PISA, one of these three subjects is tested in detail. Reading was the major subject assessed in 2000 and 2009, mathematics in 2003 and 2012, and science in 2006. The fifth and latest round of PISA –conducted in 2012– was implemented in 65 countries (comprising the 34 OECD members and 31 partner nations from Eastern Europe, Asia, Central and South America, the Middle East and Africa). In all, around 510,000 students were assessed. PISA is a useful tool which allows to evaluate students’ acquisition of knowledge within and across countries, monitor trends in student performance and identify relationships between student-level and important demographic, social and economic variables.

Mexico has participated in PISA examinations since their first round in 2000. In 2012, Mexican 15-year-old students scored 413 points on the mathematics assessment, 424 on reading and 415 on science. These scores were significantly lower than the average achieved by OECD member countries (494, 496 and 501, respectively) and needless to say with respect to the ones obtained by the highest-performing countries (see Table 2). Overall, in PISA 2012 Mexico placed 53th out of the 65 countries assessed.

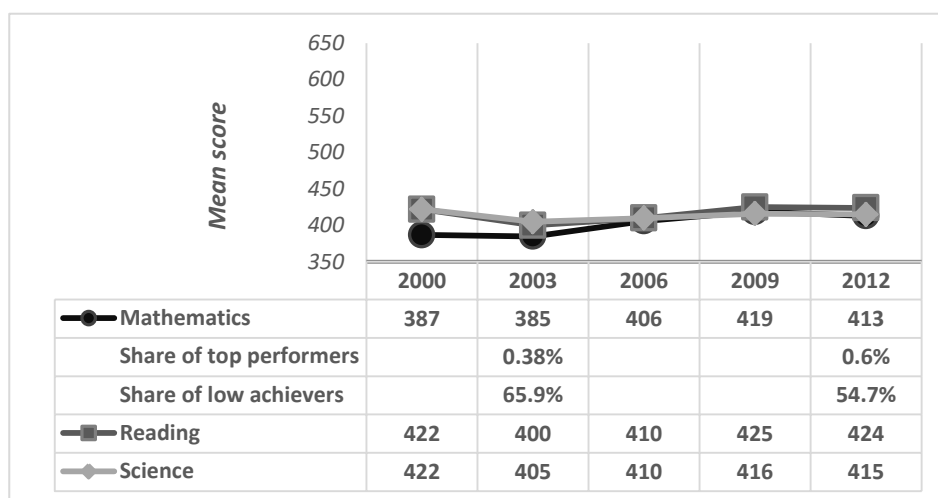
TABLE 2
PISA 2012: SNAPSHOT OF PERFORMANCE IN MATHEMATICS, READING AND SCIENCE
(Selected countries)

		MATHEMATICS			READING	SCIENCE
		Mean score in PISA 2012	Share of low achievers (Below Level 2)	Share of top performers in Mathematics (Levels 5 or 6)	Mean score in PISA 2012	Mean score in PISA 2012
1	<i>Shanghai-China</i>	613	3.8	55.4	570	580
2	<i>Singapore</i>	573	8.3	40.0	542	551
5	<i>Korea</i>	554	9.1	30.9	536	538
7	<i>Japan</i>	536	11.1	23.7	538	547
9	<i>Switzerland</i>	531	12.4	21.4	509	515
12	<i>Finland</i>	519	12.3	15.3	524	545
14	<i>Poland</i>	518	14.4	16.7	518	526
17	<i>Viet Nam</i>	511	14.2	13.3	508	528
OECD average		494	23	12.6	496	501
26	<i>United Kingdom</i>	494	21.8	11.8	499	514
36	<i>United States</i>	481	25.8	8.8	498	497
44	<i>Turkey</i>	448	42	5.9	475	463
51	<i>Chile</i>	423	51.5	1.6	441	445
53	<i>Mexico</i>	413	54.7	0.6	424	415
59	<i>Argentina</i>	388	66.5	0.3	396	406

Source: OECD, 2014a.

With the exception of the mathematics assessment, the country's performance in PISA has not improved since 2000. Mexican students' score in reading has increased only two points in the last decade and the results in science decreased from 422 points in 2000 to 415 in 2012 (see Graph 9). Regarding mathematics, Mexican students' performance increased 28 points from 2003 to 2012, the biggest improvement among OECD countries. However, in 2012 still more than half (54.7%) of Mexican students did not achieved the baseline level of performance in mathematics and less than 1% were top performers.

GRAPH 9
MEXICO'S PERFORMANCE IN PISA TESTS, 2000-2012
(Mean Scores)



Source: SEP, 2013.

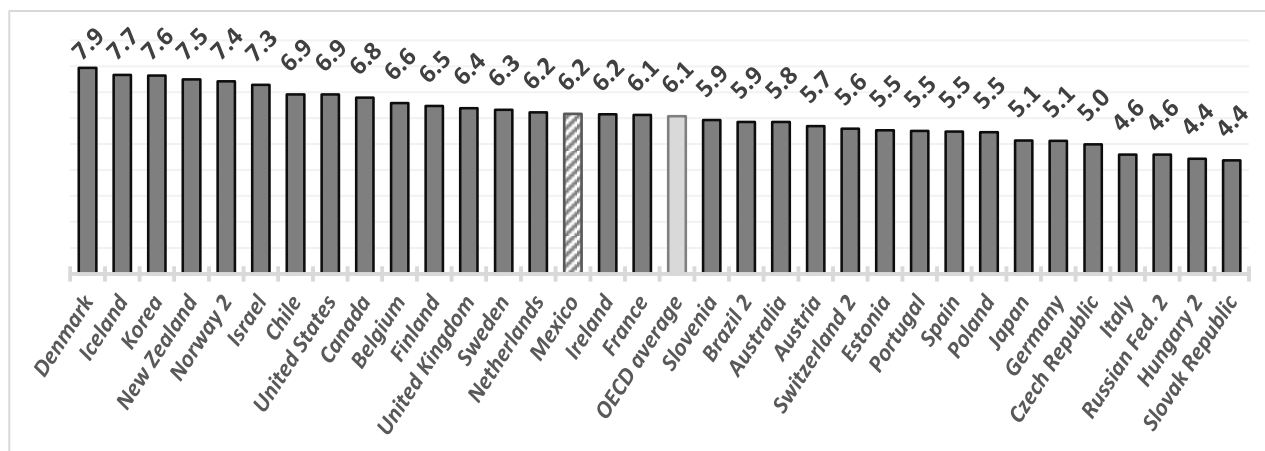
The proportion of Mexican students excelling in mathematics (0.6%) is minimum not only compared to the share of 15-year-olds who are top performers in the best scored countries –such as Shanghai-China (55.4%), Singapore (40%) and Honk Kong (33.7%)– or in leading European scorers –like Switzerland (21.4%), Finland (15.3%) and Poland (16.7%)–, but also compared to nations with a level of development more approximate to Mexico's, such as Vietnam, Turkey and Chile, where the proportions of top performers students reach 13.3%, 5.9% and 1.6% respectively. These figures indicate that, although in Mexico there are some students who stand out because of their high performance, in general the national basic education system does not enable at least a sizeable minority of the students to excel.

c) Expenditure on education

Regarding the investment in education, the total expenditure on this matter in Mexico (including spending by governmental authorities, enterprises, as well as students and their families) as a proportion of the national GDP is similar to the OECD average. In 2011, 6.2% of Mexico's GDP was allocated to expenditure on educational institutions, a

proportion slightly above the average amount invested by OECD member countries (6.1%) (see Graph 10).

GRAPH 10
EXPENDITURE¹ ON EDUCATIONAL INSTITUTIONS AS A PERCENTAGE OF GDP
FOR ALL LEVELS OF EDUCATION, 2011
(OECD Countries)



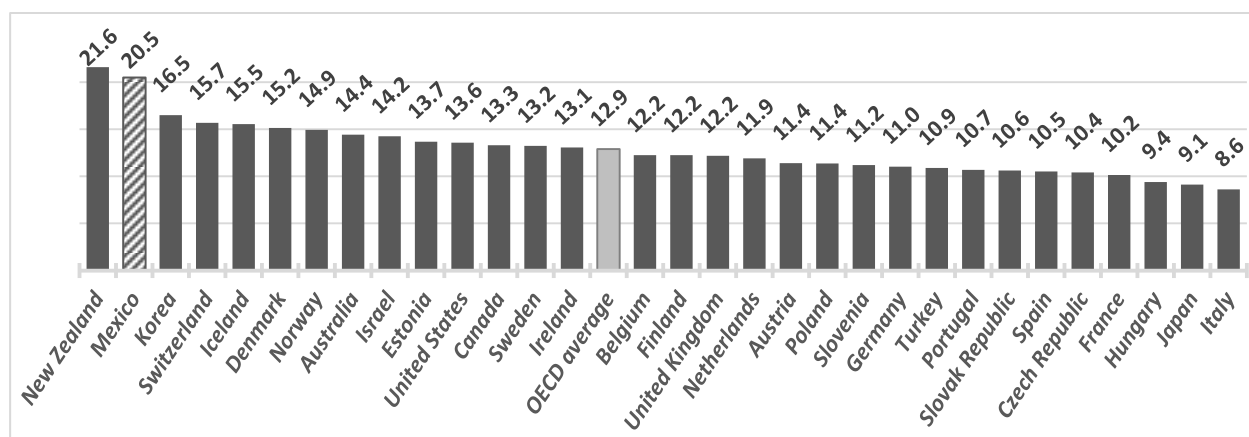
Source: OECD, 2014.

Notes: ¹From both public and private sources of funds./ ²Public expenditure only (for Switzerland, in tertiary education only; for Norway, in primary, secondary and post-secondary non-tertiary education only; for the Russian Federation, for 2000 only).

The great majority of this expenditure, 80.3%, comes from public funding (spending made by public entities, ministries, local and regional governments, etc.) and only 19.7% from private sources (households, businesses, non-profit organisations, charities, labour associations, etc.). Mexico is –after New Zealand– the second country in the OECD that invests the highest proportion of its total public expenditure in education. In 2011, OECD member countries’ investment in education averaged 12.9% of their total public expenditure, while in Mexico the public spending in this area reached 20.5% of the national public expenditure⁸ (see Graph 11). About two-thirds of the Mexican public expenditure on education (66.3%) is devoted to primary, secondary and post-secondary non-tertiary education, while less than 20% is allotted to tertiary education. This is explained by the compulsory quality of the primary and secondary education in the country, as well as the high enrolment rates at these levels of education (particularly in primary and lower secondary education).

⁸ Considered as a proportion of the GDP, the Mexican public expenditure on education represented 5.2% of the GDP. The average invested by OCDE member countries amounted to 5.6%.

GRAPH 11
PUBLIC EXPENDITURE ON EDUCATION AS A PERCENTAGE OF TOTAL PUBLIC EXPENDITURE,
2011
(OECD Countries)



Source: OECD, 2014.

Notwithstanding the vast sums that have been destined to education in particular in relation to the country's wealth, Mexico still lags behind practically all OECD countries (the exception being Turkey) in expenditure per student, 2,622 USD vs an OECD average of 8,296 in Primary Education and 2,344 USD vs 9,377 USD OECD average for Lower Secondary Education (in equivalent USD converted using PPPs for GDP) (OECD 2014c).

As it can be seen from the analysis of these sources of information, despite the substantial expenditure on education in Mexico, the country still shows important inequalities in the conditions and infrastructure of its schools of basic education, low enrolment rates in upper secondary and tertiary education, as well as poor results in international examinations, such as PISA. All these elements cast doubt on the quality of education in Mexico and, particularly, on its suitability to prepare students not only to move along the academic track, but to successfully perform and compete in an increasingly knowledge-based society.

V.- Some Lessons (Conclusions)

The undertaking of the first census on schools, teachers and students of the country and the analysis of its results in the light of other relevant sources of information provide us with *–inter alia–* several important lessons regarding the situation of education in Mexico. While some of them may seem obvious, others reflect the complex and challenging panorama to be faced in order to improve the quality of education in the country. On the whole, all demand opportune and proper attention by the government authorities, as well as other stakeholders such as teachers, families and civil society in general.

1) *Reforms should not be postponed.*

A basic public policy tenet applicable in general to all fields, would be to undertake any efforts for change preferably before the target problem becomes more complicated. The obvious conclusion that difficult situations do not normally solve by themselves but on the contrary tend to increasingly entangle, stands to reason and is well exemplified by the Mexican education case.

The longer the authorities take to address a difficult problem, the more complicated this problem may become as more entrenched interests around the status quo will develop. Consequently, any intent at reforming or changing the situation afterwards will be more difficult and costly in economic and political terms, as the groups whose interests will be affected are due to oppose such reforms and more time may be required to solve the consequences of long overdue situations.

Education reforms were avoided for many years in Mexico, causing the national education system and the quality of education in the country to lag behind other nations, and allowing the power of the teachers' unions to increase out of proportion and even go far beyond the education sphere (gaining control over the hiring and promotion of teachers, but also enabling them to be involved in extra-curricular schemes and, in the case of the SNTE, even to establish a national political party). Undoubtedly, decades of neglect have made it more difficult to address the problems of education in Mexico and, for this reason, have made it more costly the attempt at reform when finally decided upon. Therefore, the task and its solutions have become extremely complicated (if also more commendable for the reformers) with many obstacles still to surmount.

2) *Not all are the same: Strong inequality among schools in Mexico*

Even though CEMABE's results regarding the characteristics and infrastructure of schools are in general unsatisfactory, there are still huge differences between schools, municipalities, regions and even states. As shown by the census, there is in the country a strong inequality in the conditions of the educational institutions and their resources. A considerable number of schools, particularly public ones, still lack basic infrastructure – e.g. electricity (11.2%), public water supply (31%) and drainage (48.4%)–, as well as indispensable teaching equipment –e.g. students' sitting furniture (14.7%) and writing boards (9.1%). The huge heterogeneity and inequality in the conditions of Mexican schools is also manifested in their access to the Internet. While there are entities such as the Distrito Federal where 94.8% of public schools have access to this service, there are also states like Chiapas where only 6% of public schools have access to it.

With the census, it is now possible to analyse and compare in detail the conditions of each of the schools in the country. It is a useful tool, which can help to develop public policies to address the problem of inequality by compartmentalizing areas of attention and even designing strategies on a school by school basis, as CEMABE gives a complete picture of the physical situation of all schools censused that allows to make all sorts of analysis and comparisons. This information can be an invaluable tool for the

study of social mobility in the country as it permits to probe social conditions on a state, regional, municipal and even in smaller units of study all the way to individual schools.

3) *Find the lost and “phantom” teachers*

Perhaps the information that most attracted the attention of the public was the one regarding the personnel (298,174 job posts) that were not found at their registered workplace. It corresponds to SEP to revise thoroughly with the States' authorities their administrative records and lists of payrolls in order to find out the exact situation of the personnel who were found working at other educational institutions (113,259); declared as dead, retired or who had already resigned (114,998); on license or commission (30,605); and who nobody seemed to know (39,222). This revision must be subsequently audited and made transparent and available to the public, which should be able to trace each individual case to its final resolution. Moreover, SEP should also eventually consider auditing the schools and educational workplaces that refused to answer the census, in order that the complete information about the SEN becomes available to everyone.

This process is of particular importance for the future transparency of the SEN and ultimately for the success of the education reform. It was one of the original reasons for carrying out the census and constitutes perhaps the item of information from the census most sensitive for Mexican society, as it is crucial for the legitimacy of the whole reform.

4) *Spend wisely*

As it has been shown Mexico's expenditure on education as a percentage of GDP and as a percentage of total public expenditure is above the OECD level. Even though the sums involved have been huge (and more so in proportion to the country's wealth), spending per student is still well below the OECD average and results are in general dismal.

Resources are indispensable and will be very much required to make the reform successful, but there is no way to ignore the fact that without an effective use of the expenditure in education with clear and measurable targets there would always be a grave risk of wasting the resources and efforts destined to the reforms. The experience of successful countries that do not put the emphasis exclusively on the funding side of the equation should be a valuable input for the next steps of the reform.

As resources are by definition limited and more so when tasks are as enormous as the ones undertaken by this reform, it is indispensable to prioritise its most effective use. It is crucial that expenditures are directly linked to targets and that the latter are expressed in objective results that influence the quality of education. Transparency should also play a role in this aspect, as the possibility of a careful use of the budget increases under the public's watchfulness.

5) *Quality, foremost*

During the last decades, enrolment rates in primary and lower secondary education have considerably increased in the country, and the amount of public funds invested in these levels of education have been substantial. Nonetheless, the performance of Mexican students in PISA examinations is significantly below international averages and the proportion of failed students and dropouts increase when advancing to upper secondary and higher educational levels. All this makes evident that the national basic education system is not adequately preparing students to successfully move along the academic track, much less to compete against students raised in much more favourable environments in other countries.

While the reform stated as one of its primary objectives the improvement of the quality of education, at least in its first stages it has focused mainly in recovering the State control over the educational system in particular the evaluation, promotion and hiring of teachers. Although all these are elements of the utmost importance, they do not address directly the content of educational programmes, methodologies and other important aspects such as teaching materials and the conditions of schools that affect crucially the quality of education.

In October 2013 on the occasion of the presentation of the PISA results in which Mexico was last of the OECD countries and 53rd out of 65 countries that sat the exam, SEP announced a revision of the content of the study programmes for basic education.⁹ It is crucial that these programmes reflect the latest international consensus towards the understanding of texts and problems that is a premise of the PISA examinations, for its intrinsic value but also because of the fact that students in Mexico are being measured in reference to those standards.

In fact, all efforts should be directed in the end towards the target of providing quality education to all Mexican students. This should be the focus to which all other considerations should subordinate to.

6) *Start showing results as soon as possible*

Since the beginning of the education reform, SEP announced that the reform would translate into better examinations results such as PISA, in approximately 15 years (El Economista, 2013). Meanwhile as we have seen, PISA (October 2013) keeps coming (and this will keep happening at least in the foreseeable future) with lamentable results which do not reflect substantial improvements. There is a risk that Mexico's poor results in examinations could be used as an excuse for the argument that the reform is not achieving the intended goals or at least showing some good results. This will make it more vulnerable to its critics.

As PISA has become the international standard of reference and was expressedly so considered by the reform, it is very important to take into consideration -besides its

⁹ At the time of publication, there has been no official announcement in respect to the results of this project.

philosophy and methodology- the time frame in which it happens and its relation to the reform. The examination is applied every three years and published the year after. The 2012 tests were published in October 2013. The 2015 test will be published next year (2016) and the next one will be 2018 with results in 2019, already in a new federal administration. There is no reason to expect exceptional improvements for 2016 which leaves the present administration without the possibility of showing improvements in its time span.

It should be also taken into consideration that improvements are relatively slow, as we are dealing with millions of students and many years of backwardness. In the case of Mexico, as has been mentioned, it moved from 0.38 to 0.6 % of students in mathematics at the highest levels and increased 28 points in mathematics between 2003 and 2012, important improvements no doubt in proportion to the original level but far from the expectations of what is needed for the country.

Meanwhile countries like Vietnam without previous PISA assessments positioned themselves much higher than Mexico in the rankings in 2013, something which may happen with other less developed countries while many others will keep advancing and further extending the quality gap in relation to us.

Due to the huge dimension of the problem, but at the same time to ensure the success of the reform which requires its survival through more than one administration at least, it is indispensable to show some results in the short term. It would be important to consider what has failed in the past for the government in order to find allies in this endeavour (civil society, ONGs, parents, etc.), as well as to consider the possibility of implementing pilot programs with selected schools in which parents, teachers and local school authorities work together, that can have the potential of showing short term results that can be used as examples for other schools.

A scheme gathering a relatively small but still substantial number of schools in a pilot programme designed with the help of PISA could be inserted between the normally scheduled PISA examinations to probe and eventually be used as a showcase for the quality reforms being implemented in the education process. If it were possible to obtain (preferably) substantially improved results in a short period of time, it will provide the reformers with invaluable proof that the reforms are working, set an example and create a virtuous circle in favour of the whole change.

7) Better recruit as many allies as possible

The government cannot undertake the endeavour of a reform of this dimension alone. While there are forces opposing the reform there are also many stakeholders who stand to benefit from it starting with the parents and the students; civil society in general -as the country as a whole will be the final beneficiary of improvements brought by the reform-, represented by several NGOs that have been very active supporting the case for a better system of education in the country; and last but not least the many conscientious teachers and directors of schools who support this initiative.

The role of the government should be to summon them to the cause of the reform, avoid antagonizing the need for absolute transparency which can be the domain of the lower echelons of the education bureaucracy, publicise the virtues and advances of this reform in such a way as to create an awareness in the public of the desirability of a culture that values knowledge highly. In a few words, openly add all of them to the list of the allies of the government in this endeavour.

8) *Strive for top quality in education to become a deciding factor in social mobility*

As we have seen from CEMABE's results there are huge differences between schools in the country. The lack of proper facilities and lower standards of teaching would always influence the quality of education that students receive and thence their preparedness for life. These differences matter of course for each individual but also for countries in the many aspects of the world competition in which they participate.

Besides the lower averages obtained in PISA by Mexico in relation to other countries it is especially worrisome the fact that there is not even a sizeable minority or elite (maybe not a politically correct word) that is scoring in the higher levels (0.6% in Mathematics) compared to countries with similar or even lower stages of economic development. This makes it even more urgent the need for reform.

INEGI's remit is to provide useful statistical information to policy makers and researchers. Through CEMABE, besides providing complete and quality information for the SEN, one of the Institute's purposes was to produce data for a better analysis of other relevant subjects, such as social mobility. The census provides information on the differences in educational infrastructure and resources between states, regions, municipalities and even schools, which can help –for instance– to produce a thorough analysis about inequalities in Mexican schools that can hinder students' personal and social development.

Although social mobility can be influenced by many factors (such as access to quality education, social security services, employment status, labour market conditions, family background, and many more etceteras), in the light of the information examined a question remains about how much the national basic education system could effectively be influencing social mobility in Mexico: for the time being, it seems the factor of real quality education may be largely absent from the equation of social mobility in the country. As PISA 2012 results show more than half (54.7%) of Mexican 15 year-old students did not achieve the baseline level of performance in mathematics and only 0.6% are top performers. With education being a key element for individuals to successfully participate in the labour market, convert better jobs into better lives, and hence foster their personal and social development, to have a low quality education system may strongly affect the possibilities of the majority of the population for moving up the social ladder.

How much low quality education inhibits social mobility and in which sense this element is counterbalanced or substituted by other factors –such as work experience, individual productivity, social relationships or in extreme cases even by corruption practices and delinquency–, are relevant subjects for future research.

9) *The importance of keeping up-to-date and complete data*

Censuses are extremely complex and expensive projects. In Mexico, population censuses are carried out every 10 years and economic censuses every 5 years. We have no knowledge of a similar one to CEMABE anywhere in the world. It was undertaken in exceptional circumstances to support an expectedly difficult reform and its main purpose is to provide support for a solid and permanent system of information. This system has to provide quality statistics continuously and transparently to support the eventual success of the reform.

CEMABE was a result of the lack of reliable and complete data on the SEN. Such a complicated and costly endeavour cannot be repeated frequently if at all in order to update records of all the schools, teachers and students in the country. In consequence, it is indispensable that SEP keeps their administrative records permanently revised and updated, and that the new SIGED works properly in order to make this information available and easy to access for the public.

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