

Tomorrow's Schools in Mexico: Three Scenarios

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Abstract

The article begins with a description of Mexico's education in the greater context and describes its main problems with reference to the Millennium Development Goals and beyond. It identifies lack of equity and deficient quality as the two strongly related main problems in Mexican Education. It goes on to explain the causes of these problems: the way the educational system was expanded, from the more urban and developed regions to the more rural and indigenous; the importance given to coverage over quality during many years; the political nature of the power of the teachers' union; the strive towards cultural homogeneity and the assimilation of indigenous peoples to mainstream society, among others. It then describes three possible scenarios for the development of education: The first is more of the same; the second is improving equity as a priority in educational development, and the third is including, together with the purpose of increasing equity that of improving quality. This last scenario implies new ways of defining and operating the educational system, the teachers, the Mexican population, and the question of teaching. In each case, conditions, requirements and consequences are considered. It proposes that the desired future of the country is what should determine the role of education and its contribution to making it feasible.

Introduction

Mexico is the southernmost country in North America. It is a Federal country, made up of 31 states and one federal district. It borders the United States to the North and Guatemala to the South. It has 103,000,000 inhabitants. Its GNP per capita is \$13,141 US dollars.

Mexico occupies place 56 in the Human Development Index. It is the 13th economy in the world, mainly because of its size: 106 million inhabitants, more than 50% of which are under 24 years of age. It is a culturally diverse country. 10% of its population belongs to 62 distinct cultural and linguistic indigenous groups. 20 million Mexicans live in the United States, 10 million of which do so illegally. Half a million Mexicans migrate yearly.

The educational system serves 33 million students at the different levels. Official information indicates that the goal of universalizing primary education among 6 to 11 year-olds (95% net enrollment rate) was met even before the Millennium Development Goals were agreed upon. Compulsory education is 11 years: two preschool (from age 4), six primary and three lower secondary.

However, Mexico still has more than one million children, between 6 and 14 years of

age, who are not in school (1,617,000 in 2000) and who have not finished their primary education. These children belong mainly to five groups: indigenous population (the most marginalized in the country), children living in very dispersed rural areas (there are 98,000 communities in the country with less than 100 inhabitants), children of migrant agricultural workers who travel with their family – mainly working children, and children with special needs. The fifth group accounts for most of the children outside school and overlaps with some of the previous ones. It is constituted by children that have at one time been in school. As in other countries, there is a greater proportion of drop-outs among older children than among younger ones. In 2000, there were 8.21% 12 year-olds outside school, 13.9% 13 year-olds and 21.8% 14 year-olds (Schmelkes 2006). This problem with efficiency in school is due, in a great part, to poverty, but it also has to do with lack of relevance of school contents and unsound teaching methodologies.

An additional Millennium Development Goal is to reach a net enrollment rate in lower secondary education (grades 7 to 9) of age group 12-14 of 90% by the year 2015 – education in Mexico is compulsory up to grade 9. If 11-year olds in primary school are not in sixth grade, but in 5th or 4th, which is the case of more than 40 % of 11 year-olds, it will not be possible to reach this goal in the assigned time frame. In fact, the probability of a child enrolled at 6 years of age in the school year 2000-2001 of being enrolled in sixth grade five years later at age 11 is 0.71 on average, and only 0.51 if the child attends an indigenous school¹ (Instituto Nacional para la Evaluación de la Educación 2006, p.10). The probability of a child enrolled at 6 years of age in the school year 1999-2000 of being enrolled in grade 7 at age 12 six years later is 0.68 (ibid., p.17).

What children learn in Mexican schools is way below what is expected of them. In the national sample-based evaluation carried out in 2005 and published in 2006, in reading, 23% of third-grade children fared below the basic level, 56% at the basic level, 17% at the middle level and only 2% at the higher level. 56% of children in indigenous schools, and 74% in the total sample, achieved at least at the basic level (ibid., p.25, 27).

In the latest PISA exercise, Mexico fared 48th among 57 countries, the last among OECD countries in the Science scale. 18% of Mexican students achieved below level one of the PISA test.

The data we have provided indicate that Mexico has two very severe educational problems: equity and quality, both strongly related.

¹ Indigenous schools belong to a sub-system of primary schools where education is bilingual and intercultural. They represent 10% of primary schools in Mexico. Student achievement in indigenous schools is the lowest among all types of primary schools (public rural, public urban, private) in the country.

Etiology of Mexican Educational Problems

It is difficult to summarize in a few paragraphs the main causes of Mexico's educational problems. But this is an indispensable exercise if we are to build scenarios of Mexican schools in the future, since the desirable scenarios imply that the causes of the problems are being attacked.

The most important causes are historical and structural in origin. They are the hardest to combat:

- 1) The growth of the Mexican educational system, since the creation of the post-Revolution² Ministry of Education in 1921, has followed the trickle-down model, reaching the most developed areas first, and has in general expanded a dominant model of schooling. This model has become impoverished as it reaches contexts where the assumptions behind the model cannot be met (one teacher for all six grades because students are too few to allow for one teacher per grade, for example). We continue to grow according to this trickle-down model in preschool and secondary education.
- 2) The growth of the Mexican educational system prioritized coverage over quality. Quality, it was believed, could be attended to later. What was important was to insure a school and a teacher for all children. However, not being able to offer quality education, coverage could not be fully achieved, since the school system lacked the capacity of attracting and retaining students.
This was also true of teacher training (normal) schools, where it was more important to produce teachers than to train them adequately. This created profound ingrown vices in the Mexican teacher training schools which have proven difficult to eliminate to date.
- 3) An important characteristic of the Mexican educational system, indispensable to understand it, is the role of a very powerful teachers' union³ (with 1,200,000 affiliates) which grew with the ruling party (PRI) in power for 71 uninterrupted years (until the year 2000) and which was used politically as a means of insuring this party dictatorship. The power accumulated by this union has made it immune to democratic party alternation which began in 2000. However, the union's interests are political, not educational. Its power has hindered implementation and progress of many an educational reform⁴.
- 4) Post-revolutionary education pursued the assimilation of indigenous peoples to the dominant culture. It offered monolingual indigenous children an education in Spanish

² Mexico had a social revolution – the first in the XX Century, from 1910 to 1921.

³ The Sindicato Nacional de Trabajadores de la Educación is the largest union (among all Unions, not only teachers' unions) in Latin America.

⁴ For an excellent account of the history of the union and its power, see Arnaut (1994). For an account of its present-day power, see Raphael (2007).

which was not culturally (or even contextually) relevant. As a consequence, indigenous children responded less than non-indigenous ones to educational expansion. Those who did respond learned (and still do so, as we have seen) less in school than non-Indigenous students.

- 5) Two simultaneous phenomena, both external to education, have had an important influence on educational development and problems in Mexico: one is the growth of the large cities, especially of their peripheral areas, where it is difficult to plan ahead of growing demand for education, and the other is the multiplication of very small communities. In both extreme situations, it is difficult to provide quality education.
- 6) Of course poverty (that affects 42% of the Mexican Population), and unequal income distribution are very important causes of educational failure. Mexico's Gini coefficient for income distribution ranks 33 among all countries in the world, with 0.46. The highest income decile makes 24.6 times what the lowest income decile earns – rank is 24 worldwide. As we well know, poverty and inequality produce exclusion from many other services and opportunities, education among them.

But in addition to these historical and structural causes that are difficult to combat, there are several internal causes that are malleable to policy:

- 7) Instead of distributing educational resources equally, or better still, of compensating for those in greater need, Mexican education spends less on those who need it the most and concentrates educational resources in both amount and quality in the most developed urbanized regions and among the population belonging to the higher income deciles. As can be read in the latest annual report of the Instituto Nacional para la Evaluación de la Educación (2007), schools in poorer regions have less educational resources, teachers with less training and experience, poorer infrastructure, and less technology, among other indicators.
- 8) In addition to this extremely unequal educational policy, post-compulsory educational institutions have decided to introduce admission examinations that punish the victims of this unequal system, excluding them from higher education opportunities, while at the same time subsidizing public university fees of students that mainly proceed from higher income families.
- 9) The system does not trust its teachers and directors. Everything is regulated. 100% of school time is taken up by a prescribed national curriculum – the room for maneuver and decision-making on the part of the head masters or the teachers is practically zero. The supervision system is intended to control homogeneity within a very diverse and multicultural society. Teachers do make decisions – they are professionals – but when these go against regulations, they remain occult. Thus, the system does not learn from its own innovations. It makes no difference to be a good teacher than a bad one – there are no repercussions either way.

10) Teachers are still trained to teach according to the frontal model, to prioritize information and thus memorization, to treat all children as if they were all the same. Students are not taught to think, to solve, to explore, to participate, to interrogate, to do research. They are not taught to work in teams. Grade repetition is still in practice (average repetition in primary schools in Mexico is 3.8% on average, but 9.2% in indigenous schools), which in many cases explains dropping out of school. School climate is rarely respectful and friendly. Students do not always feel at ease in the classroom. Learning is much less than what it could be.

These last three causes, among other internal ones, can be modified through policy. Tomorrow's schools in Mexico will depend on the political will, or the capacity of society to shape it, to modify long-standing policies regarding equity, the role of teachers and schools, and teaching practices.

Scenario No. 1: More of the same

2015 is just around the corner, particularly when what we are speaking of are changes in education, which are always long-term. What we do today, if successful, will probably show up in educational indicators in one or two cohorts. What we do in 2008 will probably just begin to be noticeable around 2015. This is why the most pessimistic scenario is unfortunately also the most realistic one, especially since we are not experimenting any policy changes – perhaps with the exception of granting greater school autonomy -- and this timidly – in the needed directions. One example is the fact that the only equity goal for the education of indigenous children in the latest six-year program (2007-2012) – is to increase coverage of pre-school and primary education from 40 to 60% (Secretaría de Educación Pública, 2007, p.17). Another goal for all secondary schools is to increase average achievement in PISA tests in Mathematics and Reading from 392 to 435 – which indirectly could lead to modifying teaching practices and prioritizing the development of higher order thinking skills, but there is no indication of how this will be achieved.

Scenario number 1 is therefore “more of the same”. Post MDG's Mexican schools will continue to reflect and reproduce wider social and economic inequality; teachers will still be considered instruction-followers instead of decision-makers; initial teacher training will continue to emphasize information accumulation and not the development of competencies⁵. It will be difficult to give important leaps in coverage and efficiency indicators since children will be experimenting much of the same type of teaching and of learning opportunities in schools. We will reach 2015 with universal primary school coverage but with severe disparities in the attention of preschool children⁶, especially those in rural and indigenous areas, as well as in the completion of the compulsory school cycle – to grade 9.

⁵ The recent six-year program to which we referred to (Secretaría de Educación Pública 2007) says not one word about changes or new goals in initial teacher formation.

Economic development, less able to rely on oil, will have to continue to depend on the comparative advantages of a cheap and untrained working force. Mexicans will continue to search for ways to improve their quality of life which the country is unable to offer, and migration to the US will continue. Regional disparities will not be combated and might even increase. Worse still, citizen education will prosper very slowly and will not be able to contribute to a stronger democracy, a less corrupt society, and a greater social cohesion.

Schools will look much the same as they do now. They will probably have more technology – authorities are already talking about introducing a laptop per child, and connectivity is being expanded, but teachers will not necessarily have been reached with training courses to be able to take advantage of that technology, especially in the rural and indigenous areas. The digital gap may be reduced, but the educational use of information and communication technologies (ICTs) will continue to be unequally distributed. It is also very possible that the system will continue to decentralize – the process began in 1978 and is still very limited to the administration of the basic education system. We will probably have more substantive decisions taken by the states, but central control will still be strong. Parental participation will probably be fostered more than it is now, but teachers will remain reticent. Demographic pressure on the system as a whole will move upwards, since the cohort corresponding to preschool and primary education is no longer growing, but the one corresponding to lower secondary school graduates is rapidly growing. It is probable that by 2015, higher secondary education (grades 10 to 12) will be compulsory. Education will continue to be highly valued in society as a whole as the only legitimate avenue of social mobility. There will still be a national curriculum, but it will be reduced and local (state-level) contents will be allowed. Teachers will be faced with a very competitive system of merit pay based on assessment results which has very recently been announced⁷ (Secretaría de Educación Pública, Sindicato Nacional de Trabajadores de la Educación 2008), with the high risk of demoralization of the teaching force, as well as with the needed opposition examinations to obtain a teaching position.

Scenario No. 2: Equity as a priority

In scenario Number 2, equity becomes a priority. Mexico has a relatively small manufacturing sector. Its economy has depended on oil export. Oil reserves, however, have rapidly diminished, and Mexico has to find new areas of economic development in a competitive global world. New areas of development require a well educated working force and a much greater knowledge input. A new model of development has to include a more balanced regional development and therefore investments in the less developed regions in

⁶ According to a recent modification in the General Law of Education, by the year 2008 a 3-year preschool education (ages 3 to 5) is to be compulsory both for the Government and for the population. However, in the school year 2006-2007, only 30.6% of 3-year-olds were enrolled.

⁷ In a pact agreed upon by the Federal Ministry of Education and the Teacher's Union

the country. Further still, a new model of development must rely on a strong society. As the Economic Commission for Latin America has pointed out, it is countries and not individuals or individual enterprises that compete in the global market, and more democratic countries, with better income distribution, less corruption and greater social capital are the ones that are more successful in a globalized world (CEPAL 1992). Education is called to contribute to the formation of democratic citizens able to responsibly participate in society and to create trustworthy social and political institutions.

The country comes to realize that education is crucial to personal development, economic growth, democratic government and social cohesion. It also realizes that the contribution of education to these high-order purposes has one condition: that educational access, transit and learning opportunities are well distributed and inclusive. Equity is seen as a condition of quality, and quality as a condition of equity. The drive for equity leads to important quality improvement measures. At the same time, improvements in quality are made extensive population-wide. Teachers are better trained and better paid, the school is made accountable to community and thus given greater autonomy for decision-making, community participates in education at the school level and organized civil society participates in educational policy making at the municipal, state and national levels.

This scenario implies several important transformations. The first is a combination of tax and administrative reforms. More economic resources are needed for education, especially if equity with quality is to be an important goal. A tax reform is needed in order to be able to go well beyond the present-day 11% of GNP as taxes, and to increase public spending in education, which now accounts for 5.4% of GNP⁸ (UNESCO 2007). Lack of resources, however, is not the only problem. Resources are also poorly spent. Corruption is prevalent in education in Mexico. The Union takes an important share of the educational budget for its own political purposes. It is estimated that 300,000 teachers are being paid but are not working in the classroom. Some of them are in technical positions. But many others are engaged in non-educational activities. Inefficiency is clear in many areas. One of them is the teacher colleges (normal schools), whose enrollment has drastically decreased because fewer teachers are needed due to demographic changes, but which maintain their original teaching staff.

Another important transformation is consensus building. Facing inequality necessarily involves some income redistribution. Those that are being beneficiaries of present *status quo* will certainly object⁹. Civil society has to approve and participate. The business sector will perhaps be the hardest to convince, though more and more business people are beginning to believe in education (for all?) as the best bet for the future¹⁰.

⁸ This might seem high according to the Organization for Economic Cooperation and Development (OECD) standards, but no OECD country has as much as one third of its population in schools and universities.

⁹ When in 1987 the National Autonomous University of Mexico – with more than 200,000 students – proposed charging a percentage of the cost of university studies, a month-long student protest paralyzed the institution and the proposal had to be removed from the discussion table.

The Union must come to terms with educational change. The most important transformation in Mexican education is the modernization of the Union. If this does not occur, no scenario other than the “more of the same” one will be possible. Teachers in power must channel their political interests towards the political arena, and concentrate as a Union on defending the labor rights of teachers and on having a say – an informed and important one – in educational matters. But the Union should not – as it does now – define who wins in national and local elections, nor should it occupy, as a union, administrative positions in the civil administration. It must be seated on the other side of the table and contribute to educational policy from the position of a high-stakes and very informed civil society organization.

A third very important needed change, basic for equity, is social participation in education. In Mexico, the General Law of Education prescribes the existence of school, municipal and state councils where teachers, parents, the Union and other stakeholders are represented. These, however, exist mostly on paper. The capacity to participate in schools is unequally distributed. In the rural areas, approximately one third of primary school students are the first in the family to attend school and parents know little of what to expect from school and are ignorant of their rights regarding education. At the same time, parents and the community should be able to put pressure on schools in order to insure operation standards and to improve educational quality. Parents and communities have to be trained to increasingly demand and use accountability mechanisms. Social participation in education in Mexico is at its very early stages and has to be fostered and strengthened (Observatorio Ciudadano de la Educación 2008).

A complete transformation of the way resources are distributed among different types of schools and the different regions in Mexico must take place. As happens elsewhere, schools should be allotted resources that correspond to the unit cost per child multiplied by the number of enrolled students. Aside from that, schools working in very marginal or difficult or even dangerous areas¹¹, with children that speak a mother language other than Spanish, that accept children with special educational needs, should receive additional funding. Teachers have to be trained and equipped to deal with diverse populations and with heterogeneous classrooms, to deal with students as individuals, to ensure the achievement of learning objectives of all their students. They have to be paid more if they work in more remote or dangerous regions. Incentives have to be put in place in order to attract good and experienced teachers to poorer schools. Being a good teacher – both innovative and effective

¹⁰ In recent years, several non-for profit organizations from the business sector have been created with diverse objectives that have to do with the public school and with public educational policy. Such is the case of UNETE, A.C., an organization that equips public primary schools with ICTs; Mexicanos Primero, a think tank that does research and disseminates policy proposals and acts as a pressure group; Suma por la Educación, another think tank that organizes international seminars on important educational policy issues such as evaluation.

¹¹ Unfortunately, drug production and trafficking have rendered some remote rural areas and slum districts in the city particularly difficult for educators.

– should make a difference in their recognition and in their income. Affirmative action measures should be put in place for post-compulsory education.

Lastly, and in a more pedagogical strain, curriculum has to recognize and attend to diversity. Making teaching relevant and learning significant, and being in school a pleasant and even exciting experience, are basic for equity. This means working intensely in both initial and in-service teacher training.

This second scenario is not entirely unfeasible. There are several trends in modern Mexican education and society that would indicate that some of the ideas behind this scenario are already circulating. The most important are the fundamental ones: the ones that link education for all with economic development, democratic governance and social cohesion. But as has been mentioned, some moves toward greater school autonomy have been already taken. These take the form of competitions for funds based on strategic planning at the school level. This is clearly a move in the direction of devolving decision making to head masters and teachers. Social participation is beginning to become an important issue for discussion at the national level. In the year 2002, the National Institute for the Evaluation of Education was created, and educational assessments were for the first time made public in 2003. The Ministry of Education is now universally testing key grades and publishing results. Accountability is therefore also an important issue in modern policy formation.

Thus in scenario No. 2, schools will be much better equipped, teachers and schools will make many more substantive decisions, the educational system will be much more decentralized and local meso-structures will be strengthened. Teacher training will be stressed and teacher salaries improved, especially among teachers working in more difficult situations. Diversity will be recognized, valued, respected and dealt with accordingly.

Scenario No. 3: Four fundamental differences in the way we understand education

In this third scenario, the move toward equity is taken advantage of to radically transform the way Mexico views education, and acts accordingly, in four areas:

The view of the educational system

When the Modern Mexican educational system was developed, during the third decade of the XXth Century, it was based on the assumption that its basic components – schools – were homogeneous or had to become homogeneous. It was therefore sufficient to send out a series of good, informed instructions (including curricular “instructions”) and to set up an excellent supervision and control system that would insure that every school followed these instructions to the full. If the instructions were modern, good, well informed, and if all schools followed them, the system would have both quality and equity.

More than 85 years later we have neither quality nor equity. What went wrong? The assumption was false. Schools are not homogeneous, nor should they be. Each school is different. No two schools are alike. (Sammons et al. 1995). This is true everywhere, but more so in a culturally diverse country such as Mexico. Treating those that are diverse the

same can only produce inequity. Also, diversity among schools is necessary because diverse schools innovate and enhance the system as a whole.

The Mexican educational system stills operates largely according to this model. Curricular decisions are centrally taken. School regulations are national. The very limited curricular space that may be taken over by the states with regional information (geography, history, ecology) is overseen by the central authorities.

The supervision system is meant to report on deviations from instructions. It does not work quite that way, because, strangely enough, Mexican supervisors are unionized and are reticent to act against unionized teachers and headmasters. But at least theoretically, the role of the supervisor is to make sure that each teacher and head master is following instructions.

This view must radically change. We know from recent research on school effectiveness and school management that schools are important and that they can make a difference. Socioeconomic status and cultural distance of the family from the school culture are still the main factors explaining differences in school advancement and learning¹². But schools can mitigate the effect of socio-economic status (SES). In this scenario, the system is a vital one. It innovates from below, from “within” is a better expression, since the idea is that the school is at the center of the system. Each school discovers new ways of reaching the objectives that are meant for all children. But each school is also able to meet educational objectives that respond to the needs and interest of its students and their parents and community. Schools have to be strengthened in their capacity to be able to innovate and adequately respond to a diversity of educational needs.

This perspective requires a very strong educational system, probably as big and powerful as the present one, but one that is centered in supporting each school in its own search for quality and equity. It is also a system that evaluates and that uses external assessment in order to be able to intervene with timeliness when inequalities appear. It is a system meant to accompany each school with what each one needs to accomplish better and to pursue its own objectives. It is a system that takes advantage of bottom-up innovation to disseminate best practices and to stimulate interchange of experiences among peers.

The view of teachers and headmasters

As was mentioned earlier, the Mexican educational system does not trust its teachers and headmasters. That is why it fills the available time with instructions. This is probably because the system does not consider teachers as professionals. In fact, it was not until 1984 that teachers required a complete higher secondary education before entering teacher training colleges at the tertiary level. But since 1988, teachers are professionals, with a Bachelor of Arts in teaching.

But regardless of the level of their studies, teachers have always made decisions rather

¹² See all relevant literature on school effectiveness. For Mexico, Fernández (2006).

than followed instructions. So have headmasters. Many decisions are taken daily by education professionals. The decisions teachers and headmasters make are not necessarily the best decisions, nor are they necessarily responsible decisions. Therefore, this view of professional educators must be also radically transformed in scenario 3. The educational system must begin by believing in its teachers and headmasters and trusting them. But its responsibility is to put conditions in place that allow for teachers and headmasters to act professionally and to have the necessary inputs to develop professionally. Teachers must be driven to innovate and must be offered the inputs needed to make the innovation educationally successful. Recognition of good teachers is necessary. The system has to stimulate, financially or otherwise, the adequate and improved performance of its personnel.

The view of the Mexican population

Mexico is a multicultural country. Even though this has been so for centuries, even before the Spanish conquest, we have only explicitly recognized the fact since 1992¹³ and have thus acquired the responsibility of maintaining and strengthening the different cultures and languages that make up our diversity. However, is also a racist country which has historically believed that there is only one true culture, the “mestizo¹⁴” culture. School has been seen as way to transmit the mestizo culture and to allow those that are not mestizo to become cultural mestizos. The educational system has to take the blame for weakening our cultural and linguistic diversity.

The Mexican population is ignorant of this cultural diversity, because racism has preferred to deny its existence. As Mexicans, we have been deprived of our own cultural wealth. And Mexican schools have been successful in transmitting to our indigenous students the fact that their culture and language are not important and should be discarded.

Policy in general and educational policy in particular, have to view Mexican population not as culturally homogeneous but, on the contrary, as culturally diverse, and they have to consider this diversity as one of the country's greatest assets. A multicultural country needs intercultural education in order to build social cohesion. Minority cultures have to be aware of the worth of their culture and language, as a consequence in part of the education they receive in schools, which must also give them the linguistic and intellectual skills to relate to mainstream society on an equal basis. Mainstream population has to be informed of the country's diversity, must recognize the wealth that this diversity implies, and has to develop respect and appreciation for other cultures (Schmelkes 2004).

The view of teaching and learning

This transformation is without doubt the most important one, because it has to do with how we understand quality education in the modern and changing world. In this aspect

¹³ Article II of the Constitution of the United States of Mexico clearly states that Mexico is a “pluricultural” country originally based on its indigenous peoples.

¹⁴ Mestizo refers to the mix between indigenous and white. 80% of Mexican population is mestizo.

Mexico lags behind what many other countries have already achieved. Our third scenario for the future, the most difficult one to achieve, includes transformations that are already a reality in developed countries. For Mexico, however, they form part of the needed transformations for the future.

In scenario no. 3, the transmission model is discarded, and it is substituted by a model that prioritizes the development of competencies – basic and higher-order thinking skills and values for living together, developed through knowledge that is relevant and significant.

It is not necessary to go into greater detail regarding the need for this transformation – even though in Mexico this different view of teaching and learning is still far from generalized. The amount of information and of knowledge that humanity has produced in the last century and a half is enormous – greater, it seems, than knowledge produced in all the previous history of mankind. This amount of knowledge cannot fit into any curriculum. It becomes more and more arbitrary for someone to define what information and what knowledge is included and what is excluded. Also, knowledge changes constantly and renders previous explanations obsolete. If we freeze knowledge by including it in curriculum, we are probably running the risk of teaching knowledge that is obsolescent. Finally, knowledge is widely available in cyberspace. Even though in Mexico we still have a severe digital gap, cyber cafés exist in almost all middle-sized cities, and secondary schools in urban areas are all equipped with computers and internet. Transmission of knowledge can no longer be the objective of education¹⁵.

Instead, knowledge – relevant, interesting, enlightening knowledge – should be used by teachers as the material around which to develop basic and higher order skills and values for living together. Neither skills nor values can be developed without knowledge. But it is knowledge that is not prescribed by a central level, but selected by schools, teachers and communities. It is knowledge that is not transmitted but explored, researched, experimented with. It is knowledge that is used for developing basic skills such as listening, reading, writing and speaking, as well as solving problems that, among other things, involve mathematical reasoning and therefore need operational skills. It is knowledge that is used to develop higher order skills such as logical thinking, analyzing, synthesizing, inferring, deducting, inducting, and thinking hypothetically... It is knowledge that is arrived at in ways that develop the most important higher order skill: the ability to obtain information and acquire knowledge.

In this process of developing skills with knowledge, students learn to work together. It is best if they have opportunities of working together with both older and younger children, children in different schools and belonging to different cultures, members of the community, etc. In so doing, they learn to respect others, to await their turns for speaking, to defend

¹⁵ There are, of course, some exceptions to this assertion. All children should know (and understand) the country that they live in: its history, its political organization, the rights it grants to its citizens, its more important problems. They also need the knowledge that underlies the application of skills and the development of values.

their arguments but to listen and learn from others, to develop mechanisms for decision-making, to sanction behaviors that foster or hinder the search for common goals.

They have multiple opportunities on reflecting on what they have learned and how they have learned it – metacognition –, which are aided by opportunities of helping others reach learning goals which they have already achieved. They also have multiple opportunities of putting what they learn in practice and of applying knowledge and skills to solving very diverse types of problems. In so doing, they open themselves to criticism by others and are able to develop the capacity of being constructively critical of others' deeds and ideas.

Students learn, among other ways, mainly by observing and imitating, exploring, reading and doing research, talking to others, experimenting, discovering, working together, discussing, reflecting, solving problems and helping others. In so doing, they learn how to learn and they learn to enjoy learning and teaching. Thus, they become life-long learners because they acquire both the skills and the motivation to continue learning.

Learning is carried out in multiple contexts and not only the classroom: the internet, networks that go beyond the school and even the country, libraries, laboratories, sites where groups meet and work in the community; working places, places where civic activities take place... The student participates in different types of groups, those made up of students and mixed with members of the community, as well as very diverse virtual groups.

The school also becomes a learning organization, because much of what living together means is carried out in school: respect for the human rights of others, regulations that are democratically defined, democratic ways of making day-to-day decisions, stands that are taken for making proposals and sharing opinions with the greater community.

Teaching, of course, is drastically transformed. No single teacher can be responsible for a whole group of students the year round. Collective teaching, team teaching, teacher rotation, teacher specialization, teaching functions taken on by both students and community

But nevertheless, the role of the teachers is central to this way of understanding learning. But their role is completely different. Now students take on the responsibility for their own learning. And the teachers' responsibility is multifold. Among many other things,

- They must develop planning that is capable of challenging his or her students each time, and that is capable of taking into account the differences among his or her students and challenge them differently as a consequence.
- They have to diversify learning experiences in order to allow for students with different intelligences and learning rates to find the easiest way for them of reaching learning objectives, but also to develop skills for following the most difficult ones.
- They must develop a consistent formative evaluation methodology able to give timely and relevant feedback to each student and to establish learning routes.
- They have to continually innovate, to think of new things to learn and new ways of learning, to open up more opportunities for learning and doing and creating. In order to do this, they must be life-long learners and take on professional development as a permanent activity.

- They have to stimulate and accept proposals and criticisms from the students, who in turn must grow in their capacity to do both – propose and be critical.
- They have to develop a learning climate that takes every child into account that works on each child's self-esteem that ensures respectful interaction that works on the right of each child of being his or herself¹⁶.
- And they have to work so that the whole school has consistency in its search for quality with equity and for the continuous improvement and up-dating.

In scenario no. 3, teachers have been trained and are motivated to teach for placing complex learning as their main concern and objective. Headmasters have been trained and are motivated to build learning organizations with common goals and continuous professional development. Both teachers and headmasters know they have to strive for equity and understand that their responsibility is to achieve learning objectives among all their students.

The transformation of the view of teaching and learning is without doubt the most important one for insuring quality education for the future. However, if the other transformations – in our view of the system, of teachers and headmasters, of the Mexican population – do not take place, it will be almost impossible for these changes to generally take hold. Educational reform requires integral approaches and synergies, and teaching for complex learning requires institutional arrangements that train, motivate and stimulate teachers and schools for transcendental changes in their professional performance.

In scenario 3, schools will be very different from what they are now. Teachers will work as teams. The educational system will have multiple mechanisms for communicating with the school in order to help it achieve its goals – its meso-structures will be strengthened. Teachers will be highly and permanently trained and will therefore be more respected. Schools will be well equipped both physically and pedagogically. Parental and community participation in schools will be clearly fostered and trained. Cultural diversity will be respected and considered a pedagogical advantage. Schools may suffer organizational changes that will make them less rigid – curriculum will be very much decided at the school level, gradeless schools will be effective, a better balance between group and individual learning will be achieved. Teachers may work in teams since students will have more agency in their learning processes.

Final Remarks

There is a basic paradox in education. Education is impossible if educators do not look towards the future, because they are preparing students that will be parents, citizens

¹⁶ It has been shown that with poor children, all else being equal, the most important factor for explaining differences in achievement is “liking school”. In Latin American countries, where dropping out before age 16 is an option, creating a classroom and a school where children like to go and where they prefer to be is critical. See for example OREALC-UNESCO 2001)

and productive members of society in many years to come. There are development needs of students that if are not met at a certain age will hinder future development, the “windows of opportunity” brain research tells us about¹⁷. Educators have to be aware of these windows of opportunity. Also, educators have the responsibility of imagining the future, but are given no instruments to do so; so much of what teachers must do becomes guesswork. Perhaps this is what explains the paradox – education is more reactive to change than it is proactive. Educational systems are very conservative institutions and very resistant to change. Mechanisms should be put in place to help educationalists at all levels – from the classroom to the higher levels of decision making – think about the future. The possibility of relating future thinking about education to national development projects is particularly enticing, because countries also have to change to be able to face the future, and education should be an instrument towards enhancing the possibilities of carrying out the required transformations¹⁸. In this article I have attempted to do just this: the two last scenarios are the way I see the possible contribution of education to what I believe are necessary transformations in the future of Mexico’s development.

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¹⁷ This is true of the acquisition of language, of reading skills, of the learning of a second language, of value formation and of several other crucial development issues (CERI 2007).

¹⁸ The Council of Specialists in Education, created to give support to the Minister, developed an educational proposal based precisely on this question: what changes must occur in education in order to contribute to the transformations in development (Consejo de Especialistas en Educación 2006).

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