TECHNOLOGY FOR EARLY CHILDHOOD EDUCATION AND SOCIALIZATION: DEVELOPMENTAL APPLICATIONS AND METHODOLOGIES

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Chapter 4

Technology and Preschool Education in Mexico:A Country in Transformation

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Abstract

The last nine years have seen major change in the Mexican Educational System as sweeping reforms across all levels have been implemented. In particular the early years of education have become the focus of legislation to increase quality, open access, and improve curriculum. How technology shaped these sweeping reform efforts will change the future of Mexico in a global community. Early childhood education must support the use of technology if the population is to move into a techno-society.

Key Words

Preschool
Mexico
Technology
Educational Reform
Border Issues

Introduction

In other chapters you have read about preschools, teachers and technology in New Zealand, Taiwan, and Japan. This chapter will focus first on Mexico and then briefly on the border regions which connect the United States to Mexico. Given global trends that indicate that the world's predominant growth populations are largely non-Anglo students, we can expect that tomorrow's schools will need more teacher experts who can cross all borders that separate groups, whether the borders are geographic, physical, linguistic or cultural. One of the strengths of the digital generation is they are global with no borders to bind the education, business and communication systems. As most countries of the world become more economically dependent on the global money market it is important for all countries to prepare their populations for technology use. Universally higher levels of education for larger numbers of students are being demanded of educational systems that were designed decades or centuries ago to meet very different requirements (Darling-Hammond, 1996). While challenges remain such as training for teachers (Stevens et al, 1997), glimpses of hope are provided as different factions call out for education for all, especially in areas of meeting early childhood needs.

The first author of this chapter has worked in the field of physics for several years, My degrees include a B.S., M.S. and PhD in Physics. I have done Postdoc work at the Niels Bohr Institute, Copenhagen Denmark and the Lawrence Berkeley Lab in Berkeley, California. At this point you may be wondering if this chapter will be filled with equations and you may be questioning the reason a Physicist would be writing a chapter connecting young children and anything. While working at the University of Texas at El Paso I developed an interest in how students learn. During my experiences it became my belief that the early years are the most important for development of thinking. Through the funding of the National Science Foundation (NSF) I had the opportunity to develop science activities for preschool children and became involved in the Ysleta Preschool Center. This experience has changed the direction of my work. Since then my belief has been confirmed that these age groups and teachers are crucial to the future of the globalization of all cultures. Within this population lie the answers to how we can connect and support successful learning for all children. I now write children's books, develop science activities, and work with grants for teacher training and international understanding of culture on early childhood learning. My co-author always knew the importance of early childhood and is the Director of Centro de Desarrollo Infantil in CD. Juarez. Her many years of experience with young children in Mexico provides the practitioner component for the development of this chapter. Between us we have tried to approach this chapter to address university and practitioner concerns about technology and young children in Mexico.

Mexico has been referred to as a "developing country" in many reports and articles. This term comes from a Western analysis of economic development. This may mislead readers as Mexico had been developed in many areas for centuries. We have a rich cultural history, the country of Mayas and Aztecs, of civilizations that were considered highly technical and advanced. There is still a large indigenous population in our country. There are 62 indigenous towns in Mexico, where one of the 80 languages and their variants is spoken. This diverse cultural heritage influenced how education has developed. The impact of technology has changed the economic system in Mexico. We now have the ninth largest economy in the world. (SOURCE?) The change has been rapid and the educational systems struggle to keep up with the technology needs of our citizens.

As a practicing scientist for many years I have become concerned about the future of science and science education. The economic system is important but even more important is the future of science education which depends on the inclusion and investigation of diverse populations and how best to develop and utilize these resources in school environments. Cumulative research over the last five decades shows that children's development can be modified and enhanced by the quality of their early environments and experiences. Research provides strong evidence that early childhood care and education programs boost children's physical health and well-being, their cognitive and language skills, their social emotional skills and their enrolment in primary school (UNESCO 2006).

Technology is and has always been vital to the development of science. Long before the general population used the internet to communicate the science community shared research and ideas through technology and on a global basis. Computer simulations are increasingly used in experiments to explore and develop science research. As the world becomes more technology dependent there is a clear need to insure all children have the best possible educational preparation in technology. We can no longer separate communities or narrowly identify groups

of people based on ethnicity if we are to meet the needs of a global community. Because early childhood cognitive and socio-emotional development strongly predict later school enrollment and life success, we cannot afford to ignore the importance of technology in these early educational programs. If educators are to give all children the potential to become scientifically literate efforts to introduce children to essential experiences of science inquiry and technology must begin at an early age(Lind, 2004).

In the first section we will give a brief overview of technology in Mexico and then the history of early childhood education in Mexico, which includes some information about current programs. The next section will describe the components of the reform efforts which include a plan for universal pre-school, enhanced quality programs, policy changes and curriculum reform. We will discuss how technology influences and supports reform efforts. We include some of the issues, problems and controversies concerning technology use in Mexico and some of the working solutions. Finally we will share our vision of technology and early childhood in Mexico. We hope the readers will develop a better understanding of issues surrounding the use and acceptance of technology in Mexican educational systems.

Technology in Mexico

Within the last two decades, the Mexican economy has expanded to become the ninth largest in the world (UNESCO, 2006). The industrial sector has been the driving force behind much of this progress. Through the National Development Plan for 2001-2006, the government launched the Program for the Competitiveness of the Electronics and Hi-tech Industries (PCIEAT). The program's aim is to put the country in the top five electronics manufacturers in the world through a variety of strategies, including: developing local providers of electrical and electronic components, promoting the transition from analogue to digital technology, creating marketable technology nationally, and increasing investment in the sector. Business, academia, and the government are collaborating on the initiative, which counts the development of the domestic market, the strengthening of the local IT industry, the provision of technological education, the establishment of a solid legal framework, and the promotion of exports and FDI among its key goals. The drive for digitalization is seen as crucial to create a stronger internal market for software and related services, which will in turn make Mexico more competitive internationally.

The national e-Mexico initiative is further raising awareness of the power of technology and fostering the development of the internal ICT market. Led by the Ministry for Communications and Transport, its main objective is to create widespread online access to information, to encourage rapid community development, particularly among marginalized communities. According to an article in the New York Times (2008) employers are being encouraged to digitalize their day-to-day processes, from ordering to accounting. The government and state enterprises are also increasingly going digital and are tending to buy software and solutions from local suppliers.

Some of the smaller Mexican software providers are beginning to form alliances so that they can compete for large-scale projects. "Although multi-national companies are, on the one hand, competition, they are also stimulating Mexico's technological evolution by setting up software and program development sites there," says Mr. Bernal Arce (2008)."Parts of the country do not have access to and the use of cutting edge technologies because there is no market for the private sector to invest in them," says Jorge Alvarez Hoth (2008), Under-Secretary for Communications. "We are providing incentives so that the private sector finds it attractive to invest where those technologies are not present."

Mexico is one of the Latin American countries that do not impose censorship of internet use. Mexico has approximately 25 million Internet users and continues to increase the demand for broadband Internet services. Mexico is the country with the most internet users in Latin America, and in August 2005 Cisco Systems, the industry leader in Internet backbone routing equipment, said "they see Mexico and other Latin American countries as the focal point for growth in coming years, with Mexico receiving the biggest chunk of their investments, identifying it as a *hypergrowth* market for equipment suppliers." Additionally looking at the historical growth for the period from 2001 to 2005 we see broadband Internet jump from 0.1 subscribers per hundred population to 2.2 subscribers per hundred population, a growth of 2200% in just 5 years. As Mexico continues to move toward a more technological state it is vital that the schools keep up by preparing the children of Mexico for global economy. Mexico is considered the hope for Latin American in industry and technology. These issues have influenced the educational system to rethink their policies and approach to education.

Background

At the present time, Mexico ranks eleventh among the most populated nations in the world, with about 100 million inhabitants. The demographic analysis carried out in 2000 by the Consejo Nacional de Población (Conapo) [National Council on Population] makes it possible to anticipate two tendencies that will influence the demand for educational services over the next few decades: i) the reduction in the population under fifteen years of age and the increase in the population at a working age, between 15 and 64, as well as of adults over 65; and ii) the increase in the number of small towns, spread across the national territory (SEP, 2003b).

From 1970 to the present, the birth rate has dropped markedly, so that the proportion of the group at preschool age has fallen from 13.6 million in 1995 to 12.9 million in 2000. However, the demand for this educational service will increase as a result of the national act that makes pre-school education for children of three, four and five years of age obligatory. Also, the population at an age to attend primary education (6 to 11) also began to fall gradually in the year 2000, so that it is estimated that the maximum figure reached in 2001 of 13.7 million will decline by more than two million over the next fourteen years to reach 11.2 million in 2015, which implies a reduction in demand of 18% during that period among the population at an age to study primary school (Conapo, 2003).

The government of the Mexican Republic is made up of the Legislative, Executive and Judicial powers, and legally it is governed by the Political Constitution of the United Mexican States, enacted in 1917, that has been reformed with respect to some of its articles over nearly nine decades, to give it greater validity. The Federal Executive Power, through the Secretaría de Educación Pública (SEP) [Department of Public Education], is responsible for educational administration; the General Education Law and the State Laws represent the legal basis for its application and development. The Third Article of the Constitution is one of the distinctive stamps of the educational system and its essence resides in the fact that the education offered by the State on Mexican territory is national, lay, free of charge, and obligatory. Nowadays it is obligatory for the entire population of the country to study pre-school, primary and secondary (junior high) education. Until 1992, most of the processes related to the issue of education were centralized in the national authority, a situation that was modified soon after issuing, that year, an agreement between federal and state authorities called the Acuerdo para la Modernización de la Educación Básica y Normal [Agreementfor Modernizing Basic and Normal

Education], which mainly resulted in educational decentralization. Since then, federal and state authorities have shared responsibilities in the operation of the Sistema Educativo Nacional (SEN) [National Educational System].

Mexico today is undergoing profound transformations and it is a nation with great diversity, where extreme situations coexist, in both socio-economic and demographic terms; it is a nation that recognizes the importance and impact of the educational function, in the country's present and future development, so that a great deal of attention needs to be paid to the field of education. Located geographically in North America, it forms a Federal Republic, made up of 32 federative entities (states and a federal district). According to 2003 figures, the Mexican population is 104.2 million (Conapo, 2003), 20% of whom are concentrated in the metropolitan area made up of the Federal District, which is the country's capital, and the metropolitan municipalities of the State of Mexico.

While the Mexican population is becoming mainly urban this growth of the cities creates a process of dispersion of the rural settlements. It is estimated that a third of the settlements of fewer than 500 inhabitants are located outside of the area of urban influence and far from a highway, and that more than 77% of the towns with fewer than 1,000 inhabitants show high and very high degrees of marginalization, which, in turn, is related to geographical conditions that hamper access to these communities and represents an obstacle to providing them with the goods and services necessary for their development. Attention to the educational demand of dispersed groups of population requires differentiated educational modes in order to guarantee opportunities for education (SEP, 2000a).

Finally, a topic that we must not neglect to mention is that of the indigenous population in our country. According to the General Population and Housing Census in 2000, this population comes to over 8 million native people distributed throughout the country's 32 states, most of them settled in 24 states. There are 62 indigenous towns, where one of the 80 languages and their variants is spoken. The indigenous population from 0 to 14 years of age in the country comes to over two and a half million people. Services of indigenous education are provided in 24 states in this country in order to guarantee that the students reach the goals of the national basic education, are able to express themselves in oral and written Spanish and in their mother tongue, and know and value their own culture.
(*http://sep.gob.mx/wb2/sep/sep_4413_informacion_basica_g*).

Mexican Education

This section will help the reader understand the evolution of preschool in Mexico which directly influences impact, acceptance and use of technology in early childhood programs. Formal attention to children in the preschool years in Mexico began in the late 19th century. Similar to program development in many countries Mexico divided their approach between programs that focused on the education of young children as the primary purpose and those that focused on care, mainly within a welfare context. These were seen as two different issues in education which required different approaches to program development. These two different goals influenced the types of experiences children have and services provided.

For seven decades, from 1921, the Mexican education system was centralized under the authority of the Ministry of Public Education (Secretaría de Educación Pública - SEP). However, in 1992, the National Agreement for the Modernization of Basic Education brought constitutional reforms and in 1993, a new education law established the framework for the reorganization of the education system. The main policy reforms under the new law include decentralization, by which the government transfers most responsibilities for basic education

and teacher education to its 31 states; extension of compulsory schooling; expansion of the preschool system; curricular reform; and increased emphasis on compensatory programs to improve education in disadvantaged communities (Salas Garza, 1998). Teacher in-service training programs also have received increased attention, as the government recognized the needs of teachers to update and refresh their skills.

Despite improvements in education in Mexico over the last century, such as a rise in the adult literacy rate to over 90% and steady increases in enrollment in all levels of education (SEP, 1999), the system still faces challenges such as high rates of failure and drop-out. In the mid-1990s, only about 60% of the students who enrolled in primary school completed that level and only 88% of those continued on to lower secondary school (Gadel, 1997). As education reforms and new programs in rural and indigenous areas take further hold, the Mexican government hopes to continue to see improvements in meeting its goal for all citizens to have access to and to successfully complete basic education (US Department of Education, 2003).

Table 1. Proportion of students, teachers, and schools, by type of support2002-2003 school year.

	Students	Teachers	Schools
Public	88%	82%	89%
Private	12%	18%	11%

Source: DGPPP-SEP, 2003.

Three organizations considered notable by the UNICEF Innocenti Research Centre (2007),set up during the nineteen nineties influenced the changes to early childhood program practice. One mechanism is the National Commission for Monitoring and Evaluating the National Program of Action to Benefit Children (the Commission). Set up in 1990 after Mexico signed the Convention on the Rights of the Child, the Commission is tasked with monitoring the country's commitment to the World Summit for Children. Led from the health sector, the Commission drew high-level membership from almost all key ministries in the government including bodies responsible for food, water and security. The Commission's biggest achievement was the development of a National Plan and State Plans for improving children's well-being. But, underscoring disadvantage of politically supported mechanisms, the Commission was dismantled with the change of government in Mexico in 2000, giving way to another presidential mechanism, the National Council for Children and Adolescents.

Another notable mechanism is the Informal Working Group to Define Indicators of Well-Being for Children under Six Years of Age, which was set up on the advice of the international development agencies operating in the country. The members, drawn from the education, health and family development sectors, were low-ranking officials. Although the success of this mechanism remains to be proven, it shows that focusing on specific tasks is workable in an informal mechanism. And the third notable and successful mechanism is the National Coordination and Technical Committee of the Program Opportunities in Mexico. Located within the Secretary of Social Development, the Committee was set up in 1997 to coordinate different sectors and deliver an integrated social assistance program, concerned with education, social assistance and health and nutrition, to extremely poor families. Its membership is composed of

representatives of the social, education, health and treasury ministries. Having jointly set the rules of operation and approved initiatives, the Committee helped deliver the multi-sectored program successfully to the target populations.

Issues, Controversies, Problems and Possible Solutions

A recent study by Mexico's National Institute for Educational Evaluation (INEE) reveals that the number of private preschools in Mexico jumped 116% from 2000 to 2005, while the number of private elementary schools increased 15% during the same time period. Conversely, the number of public primary schools (and teaching staff) decreased nationwide by 2% from 2000 to 2005, according to the INEE (2007). In some regions, closures of public preschools and reductions in their teaching staff were even more dramatic. In Guanajuato state, for instance, the number of public preschools and teachers that served indigenous communities dropped 67% and 44%, respectively, from 2000-2005. However, overall student enrollment in Guanajuato's indigenous preschools increased by 1% during the five-year period examined. This trend is attributed to the inclusion of English and technology in private school curriculum (Felix, 2007). This may influence the enrollment and goals of the reform for public schools of Mexico.

Illiteracy among the population from 15 to 19 years of age is less than 2.9%, and the average schooling for the group from 20 to 29 is ninth grade, which is equal to finishing secondary (junior high). More than 92% of children between 6 and 14 attended school, and 9out of every 10 teenagers in our country have completed primary school by the age of 15. These figures reflect the expansion of the coverage of educational services and the improvement of the terminal efficiency rates. The SEN has had to face great challenges. It is necessary to point out, first of all, the population growth, from 13.6 million people in 1900 to nearly 100 million in the year 2000. At the beginning of the 20th century, Mexico was a country where three-quarters of the population inhabited small towns and settlements, far from the urban centers. It is estimated that in 1921, the year in which the Department of Public Education was founded, illiteracy affected nearly 70% of the country's adult population, and the lack of teachers and schools made access to education very limited, for which reason the average schooling was one year (SEP, 2001a). In 1930, the educational system attended to 1.4 million students and 20 years later the registration had increased to more than twice as many. By the second half of the 20th century, the population had quadrupled and the great expansion and diversification of educational services began. Owing in great measure to the dynamics of population growth, the SEN had concentrated on extending the coverage. Now, having overcome such basic problems as providing widespread access to primary education and reducing illiteracy, the SEN faces, among other challenges, a more complex one that consists in making it possible for all children and teenagers to study basic education and to successfully finish this fundamental part of their studies (SEP, 2001c).

Other major challenges for the level of the basic education will be to attend to the demand of the age group from 3 to 5, resulting from the implementation of the obligatory nature of preschool education, and to train the number of teachers that are required by the increase in demand, as well as to strengthen secondary education, because it constitutes a necessary step for people to enter upper intermediate and higher levels of education. At the moment, the greatest integration question pending in Mexico is the merging of Early Education for 0-3-year-olds with Preschool Education for 4-6year-olds. The development of an integrated curriculum could be a milestone achievement that would eventually provide a firm pedagogical framework with which

different sectors could work harmoniously, without necessarily the help of a coordination mechanism. The state is developing a comprehensive curriculum for children 0-6 years old.

Current Reform Efforts

In recognition of the value of providing early learning opportunities, many nations have expanded early childhood care and education in recent years. Mexico is a unique case in which expansion of early childhood care and education has occurred in the past 5 years, as have initiatives to improve quality and revise the national curriculum for preschoolers. The preschool expansion included a mandate for all parents in Mexico to send their preschool-aged children (3, 4 and 5 years old) to preschool, with target dates of 2004, 2005 and 2008 for 100% coverage of 5-year-olds, 4-year-olds and 3-year-olds, respectively. The quality improvement initiative was part of a larger program providing supplemental funds to select preschools and schools in Mexican public education system. Finally, the curricular reform instituted a new preschool curriculum to be implemented nationwide for all programs across the 3- to 5-year-old age range.

Changes in Educational Policy

Social Commitment to Quality in Education

The Social Commitment to Quality in Education is an agreement made in 2002 among representatives of different sectors, educational institutions, and society. Its nature lies in creating a consensus and agreement regarding the measures that are intended to improve the quality of education, which will allow these sectors to monitor them and check they are carried out. The importance of this initiative is the joining of different sectors in a tacit recognition of their responsibility in achieving educational quality.

The priorities of the Social Commitment, for whose implementation different commissions have been formed, are the following: the shared responsibility of the sectors, the importance of social participation, the application of contents and focuses constantly being revised, and the conviction that the school is and should be the nucleus of the educational project, which in turn will be in keeping with the needs of the context. Another of its priorities is to consider the school the place where strategies are generated for the teaching-learning process and the constant updating of teachers.

National Institute for the Evaluation of Education (INEE)

The National Institute for the Evaluation of Education (INEE) was created in 2002 by the SEP as a means to weigh the results of the National Educational System with rigorous and reliable mechanisms, disseminate them, and use them in improving the quality of teaching and learning. To achieve this, the INEE works with three types of indicators: the quality of the national educational system and of the state subsystems, learning tests, and the evaluation of schools. It is the responsibility of the SEP to issue guidelines for the evaluations, as well as to assess the results of the Educational System. It is the responsibility of the INEE to make precise diagnoses of the educational situation that would make it possible to establish viable goals and design appropriate strategies for improvement, to create and operate a system of indicators for evaluating the processes related to learning and the teaching function, to promote the culture of

evaluation and disseminate its results, to develop training measures, to carry out and encourage educational research, as well as to coordinate international projects in which Mexico would participate and represent it before international organisms.

During the first year of operation of the INEE, the following results stand out:

- Analysis of the results of the national progress tests in reading and mathematics (called National Standards) applied by the SEP at the end of the 2002-2003 school year.
- Analysis of the test results of the Latin American Laboratory of Evaluation of the Quality of Education of 1997.
- Two studies on the tests of the TIMSS (Trends International Mathematics and Science Study) applied in Mexico in 1995 and 2000.
- Different analyses of the results of the application of reading and mathematics tests in 1998 and 2002.

As for the PISA tests (Program for International Student Assessment) of the Organization for Economic Co-operation and Development (OECD), the INEE will make a thorough analysis during 2004.The results expressed yearly in the first report of the INEE on the evaluation of the SEN with respect to basic education may be consulted through the following website: http://capacitacion.ilce.edu.mx/inee/estadisticas.htm

Compensatory programs

The National Educational System faces many challenges through the different levels of attention and coverage of teaching services, as well as compensatory and welfare-type programs. Since 1992 national programs have been developed that are aimed at counteracting the lack of equity in the population groups with greater educational backwardness. Some examples of these programs are:

Program to Combat Backwardness in Initial and Basic Education. The purposes of these programs are to reduce the dropout rate, increase attendance, and improve progress at school. To this end measures are being taken to improve the conditions of teachers and schools in initial and basic education by means of didactic resources, training of teachers and administrators, recognition of teaching performance, support for school supervision, infrastructure and equipment, participation of parents in supporting the school administration and institutional strengthening. In the 2002-2003 school year, the program benefited 4.5 million students by providing packages of school supplies; 40,000 schools and over 122,000 teachers were given consultancy; more than 13,000 teachers benefited from the incentive for teaching performance; economic support was given to parent associations in 12,000 kindergartens and 47,000 primary schools; the infrastructure was strengthened through the construction of classrooms; and 500,000 parents were trained to order to improve the initial education of their children in the form of home study. (del Refugio Guevera, M. & Gonzalez, L.E. 2004).

Community Education. Through this program, services in preschool and primary education are offered to children of small mestizo and indigenous rural towns, with populations ranging from less than 100 up to some 500 inhabitants. In 2002-2003, around 128,000 students were provided with community preschool services, and over 141,000 students with community primary education.

National Program for the Development of Indigenous Peoples. Through this model, services in bilingual pre-school and primary education were offered for children who speak an indigenous language. During the 2002-2003 school year, nearly 1,150,000 students were attended to. Text books were printed in 55 variants of 33 indigenous languages.

Opportunities Human Development Program. By assigning scholarships, this program supports school access and regular attendance for students under 18 years of age who study from the third grade of primary education to the final grade of senior high school. It also provides school supplies to scholarship holders who are studying in primary grades. In 2002-2003 nearly 4 million students in primary and secondary schools were benefited. This program constitutes one of the Federal Government's most important initiatives in supporting the inclusion, continuance, and progress in school of children and teenagers in conditions of extreme poverty.

National Program to Strengthen Special Education and Educational Inclusion.The objective of the National Program to Strengthen Special Education and Educational Inclusion is to guarantee an educational attention of quality for children and teenagers with special educational needs, giving priority to those who have some disability. These students are integrated into the basic educational establishments - kindergarten, primary and secondary schools -applying specific methods, techniques and materials. During the 2002-2003 school year, more than 420,000 students were attended to with this program. Since 1993's education law – the integration of children with special needs has been mandated. But a national program and monitoring system was not instituted until 2001. Integration is the aim of the program.

Schools of Quality Program. The aim of this program is to enhance the capacity of school organization by incorporating into basic education schools a model of self-management based on eight basic principles: freedom in decision-making, shared leadership, team work, flexible teaching practices depending on the diversity of the students, participative planning, and evaluation for continuing improvement, responsible social participation, and accountability(http://www.escuelasdecalidad.net/).

The Programa de Escuelas de Calidad (PEC) is a quality improvement initiative directed toward public schools providing *educación básica*, focusing on school management. The voluntary PEC program aims to increase school autonomy and performance by encouraging collaborative work among parents, teachers and school authorities, by improving planning and pedagogical processes and by providing modest resources. To qualify for the program, schools must carry out a diagnostic evaluation and present a School Strategic Transformation Plan. Funds for the program are provided by the Mexican government, the World Bank and other sources (World Bank 2005). Grants are provided for up to 5 years to each qualifying school, subject to annual review. Federal funding is expected to be matched by states, in a 3 (federal) to 1 (state) ratio.

The PEC program has, as one central goal, increasing parent and community involvement in school management. It seeks to do this principally by including parents in decision-making and monitoring; for example, parents are expected to engage actively in the planning of quality improvement, and to verify purchases and contracts made to the participating school. In addition, the program mandates evaluation, both at the school level (ongoing monitoring of the School Strategic Transformation Plan) and nationally, through evaluations that incorporate student assessments and a national information system. Thus, although the

program increases school-level autonomy, it also includes an accountability and evaluation component that requires reporting on whether goals set in planning exercises were met and, at primary and secondary levels (not preschools) includes student-level assessments of educational progress.

The PEC program was first extended on a large scale to preschools in the 2003-2004 school year, after it had become established in the two prior years in primary and secondary schools. In the 2004-2005 year, there were a total of 4,096 PEC preschools. This represents about 5 per cent of the total set of preschools in Mexico. The vast majority of PEC preschools are of the general type, with about 10 per cent of the indigenous type. Note that the PEC program does not extend coverage; rather, the program focuses on improving quality in existing preschools.

Curriculum Changes

In primary education, there is a core curriculum. However, the implementation of the curriculum may vary across the country, as the government has tried to tailor the core curriculum to address the ethnic and cultural diversity of students and the special needs of Mexico's indigenous population and students living in remote areas (Husén and Postlethwaite, 1994). The school calendar is 200 days in length and daily class time is between four and four and a half hours (SEP, 1999). Within primary education, there are seven subjects that form the core curriculum: Spanish, mathematics, history, geography, civic education, health, and environmental education. Approximately 45% of class time is devoted to Spanish in the first two grades. In grades three to six, about 30% of class time is in this subject (SEP, 1999). Textbooks are prepared by the central government and distributed free of charge to all primary education students. In 1993, SEP undertook to revise all primary education textbooks in order to bring them abreast of new curricula, a process that was to be completed in 1999. SEP prepares the free textbooks, and other educational resources, in both Spanish and native languages. In fact, in 1998, over 1 million textbooks were distributed in 33 native languages and 52 dialects (SEP, 1999).

Now that new mandates encompass the early years of education is anticipated that these programs will follow a similar pattern of development as the primary grades. The next section discusses the proposed and new expectations for preschool. We have added our ideas about how technology should be included in these changes.

Pedagogical Principles of Mexican Reform in Preschool Education

The following three groups of pedagogical principles guide the curriculum reform in early childhood education. Specifically, they provide a common framework to guide teacher practice.

These principles help teachers identify the conditions under which practice is effective. It is important to emphasize the centrality of reflective practice to this reform effect – it guides not only the development of activities, but also the way in which a teacher individualizes instruction to meet the needs of children (UNICEF 2007).

Pedagogical Principle I

The first set of principles concern children’s development and learning processes. There

are four assumptions:

- Children will arrive at primary school with knowledge base and the capacity to develop further knowledge
- The primary role of the teacher is to promote and sustain children's motivation to learn'
- Children learn through peer interaction
- Play promotes development and learning

This social connection is said to manifest effectively because young children respond to each other using: symbols; naïve language and nonverbal communication; practice self-narrating; and thinking in metaphors. Peer groups support the power of negotiation that is not accessible in families or classrooms because of the authoritarian nature of the hierarchical system. It was Maria Montessori who said: "Our schools show that children of the same age and different ages influence one another (Montessori, 1967, p. 226). Denham et al. (2003) and Dunn, Cutting, & Demetriou (2000) have researched preschool children's social competence in relationship to cognitive development; both studies indicate that environmental influences resulting from peer interactions advance social competence and cognitive development. In addition, they conclude that peer influences are particularly vulnerable to affect and dispositional traits in preschool children. Freeman & Somerindyke (2001) studied peer interactions of preschool children during a computer exercise using a Vygotskian constructivist framework. They concluded that the computer center could effectively encourage supportive scaffolding interactions among children as they work side-by-side to achieve the goals. This implies that computers support social and peer interaction in preschool classrooms.

Pedagogical Principle II

The second group of principles concerns diversity and equity. There are three assumptions:

- School should offer opportunities regardless of cultural background
- All teachers, schools and parents should work to promote the inclusion of children with disabilities
- Schools should be regarded as a place for socialization and learning and therefore must promote equity across gender and race

This principle is vital to the acceptance of the global environment. The large percentage of diverse populations in Mexico demands understanding and education for all children. The inclusion concept is similar to programs implemented in Texas and some parts of the United States. In chapter 6 of this book you will find many ways that technology can be used to insure special needs students have the opportunity to participate in educational environments. Cultural expectations of gender roles are evident in science and technology professions. If we are to overcome these stereotypes we must work intentionally to insure equity of technology learning and use.

Pedagogical Principle III

The third group of principles concerns school as an intervention. There are three assumptions:

- The school and classroom climate should promote children's trust and the ability to learn
- Individualized instruction is critical for schooling to have positive results
- Collaboration between teachers and family members promotes children's development

Parts of this principle make Mexico a unique reform effort as it addresses the ideas of trust and belief systems. Bandura (1988; 1986, 1987); Schunk (1995)Parajes & Miller, (1995) and more recently Tschannen-Moran and Woolfolk Hoy (2003) strongly support the influence of self-efficacy or one's belief in their ability to perform a task successfully as an influencing variable in education. The next chapter gives more information about this thinking. Other new research on children's epistemological beliefs could be another factor in early childhood development. Chapter 10 discusses the new research about epistemology.

School as an intervention to all aspects of the child's learning is an important idea. Mexico supports the support of the affection dimensions to learning which would include trust relationships among peers, caregivers and teachers. This supports the work of Bakhtin's (1895-1975) Public Square approach to interaction. This guides educators to think of the interplays of time and space that influences the socio-cultural-economic-political and demographic implications of the contexts in which our schools operate. Technology would clearly support individualized instruction in the preschool classrooms as new and better software is developed to address learning needs. Family collaboration is developing as another technology based educational tool. Chapter 8 discusses ways technology can involve families through on-line communication.

The Mexican preschool curriculum is most similar to the High/Scope curriculum in the U.S., though it takes a broader approach in some developmental domains and clearly emphasizes some similar competencies as other well known learning approaches such as experiential learning.

By emphasizing children's competencies, this reform not only recognizes that children come to school with a range of skills and experiences, but it also places the child at the center of the learning process. In doing so, educators are required to develop tools and strategies to promote development across domains and experiences. However, these competencies will be realized only when educators have a clear understanding of the program, when comprehensive work occurs in the classroom setting, and when educators critically analyze and share their experiences in the classroom with their colleagues. The early childhood reform has an open character, meaning that teachers are able to adapt the content and methodologies they use to respond to the needs of the particular populations they serve. It is worth noting that in contrast to other early childhood programs like Reggio Emilia (Cadwell, 2003), the theory underlying the national curriculum reform in Mexico is focused on the classroom and center. Specifically, the reform efforts in Mexico tend to take a more setting level-approach to children's learning as opposed to the broader approach involving numerous stakeholders (e.g., children, teachers, parents and the public) taken by Reggio Emilia.

The reformed Mexican curriculum is based on a detailed set of child competencies, rather than a set of predetermined activities, and therefore has a child-centered character. There are six domains of competencies, with many component behaviors that illustrate that domain. The curricula and pedagogical guidelines are meant to emphasize the child's holistic development.

Table 2: Child Competencies from the Curricular Reform (UNICEF, 2007)

Formative Fields	**Aspects in which they are organized**
Social and personal development Language and communication Mathematical Thinking Exploration and knowledge of the world Art expression and appreciation Physical development and health	Personal identity and autonomy. Interpersonal relationships. Oral language. Written language. Number. Form, space, and media. The natural world. Culture and social life. Musical expression and appreciation. Corporal expression and dance appreciation. Plastic expression and appreciation. Dramatic expression and theatrical appreciation. Coordination, strength, and equilibrium. Health promotion.

The "Programa de Educacion Preescolar 2004" does not include direct mandates for the introduction of educational technology; this however takes place at different levels in individual schools. The teacher plays a critically important role in determining how to best meet the individual
needs of students. In contrast to the prior curriculum, the current one has an open character, in which teachers adapt the content and methods they use to respond to the needs of the particular populations of families they serve. It is also more explicitly responsive to cultural diversity and the needs of local communities, in emphasizing teachers' involvement with their communities. During the Fox administration technology was introduced to the latter years of elementary school and the middle school, but not to pre-K. As Mexico continues to reform policies and standards for pre-K education it is expected that technology will be included.

Preschools in Mexico

Traditional preschool caters to children between the ages of three and five and is generally provided in three grades. Preschool is provided free and it has been mandated that all

children ages 3-5 attend. New mandates have added the 0-3 age range to public preschool. In general, preschools operate along age cohort lines, and open for 3 or 4 hours daily, five days a week. Some preschools offer a morning and an afternoon session. A special subset of preschools are labeled "mixed pre-schools" (*jardínes mixtos*) because they combine a regular preschool session with care during a day-long program. Obligatory "basic education" in Mexico includes preschool, primary school and lower secondary school, covering the period from age 3 to age 15. The Law of Obligatory Pre-schooling, November, 2002, backed strongly by the National Teacher's Union (SNTE), not only makes it obligatory for the State to provide pre-school education services for children 3 to 6 years of age when that is demanded, but also makes it obligatory for parents to see that their children attend a public or private pre-school (OCED, 2006).

Children from 0-3 years

Educación inicial, or child care with an educational purpose, caters for about 3% of children 0-3 years, mostly in the Federal District and other large administrative centres. Programs are generally divided into programs of *direct* (centre-based services for young children) or *indirect* attention (targeted at parents and families). Programs of direct attention reach the fewest children (about 30% of the total), and then, in majority, the children of women holding a recognized job, often within the state sector. Small programs organized by DIF and SEDESOL attempt to address the needs of children of working women without social security.

Public preschool includes several systems. These types of preschool are administered directly by the Secretaria de Educación Pública (SEP):

a) general *(general)*, CENDI, or Centros de Desarrollo Infantil: In CENDIs, care is provided for children from 45 days up to 4 years of age. CENDIs are generally well regulated, with good resources and favorable child-staff ratios. In general, they use a curriculum elaborated by SEP, but as they are located predominantly within and staffed from the health and social security sectors, they tend to pursue a health/protective approach, although today with a growing emphasis on child development.
b) indigenous *(indigena)*: About 8% of the population (8 381 752 people) is classified as "indigenous", distributed among 64 ethnic groups. Of these, 1 233 455 are children under 5 who live in families where an indigenous language is spoken. Enrolment rates for indigenous groups are considerably lower than for urban middle-class or non-indigenous groups (OECD 2003).The economic and educational circumstances in these families are much poorer than the national average. The indigenous pre-school program is administered by a special division within the SEP, and a new program of inter-cultural education is also exploring ways to attend better to these groups. A variety of other programs also exist for particular populations including indigenous children, those in small rural communities, children of migrant workers, children of women working in the informal sector, mothers in prisons, etc., but outreach is small compared to the number of children and families concerned. and
c) community preschools operated by CONAFE (Consejo Nacional de Fomento Educativo). The CONAFE system of education aims to reduce educational inequities in Mexico by providing support to the most disadvantaged schools and populations (Garza, 2005). Its aim is therefore explicitly compensatory, when compared to the general preschool

system. Multiple indicators of poverty are used to select schools for CONAFE support. The program provides professional development of teachers, audiovisual technology, curricular materials, and improvements to school infrastructure. Local preschools are run by parents and community leaders. Teachers are mostly without prior formal experience in teaching, and are provided scholarships for their tuition in schools of education. In return, they live in the communities of CONAFE preschools, teaching as well as providing social services and educational assistance directly to parents in homes. CONAFE was in fact using a competencia-based system of curriculum before the curricular reform of 2003-2004. It is worth noting that socioeconomic disadvantages that accumulate over the first five years of life significantly diminish access to ECCE program for many nations' most vulnerable children (UNESCO 2006).

Among these types the *general* or CENDI type of preschool serves the largest number of preschool-aged children in Mexico. General preschools may be located in urban or rural areas. The CENDIs, which are almost exclusively urban, provide services mainly for children ages zero to 48 months, with some centers adding care and education for older children. The IMSS, or Mexican Institute for Social Security, administers several types of ECCE, including some of the CENDIs, child care and preschool for children of IMSS employees and child care preschool for children of working mothers in the formal sector (eligible for social security).

Table 3. 2003 *Pre-school education*

Pre-school education	Children	Teachers	Schools
	3,635, 903	163, 282	74, 758

Source: DGPPP-SEP, 2003.

Pre-K education in Mexico and Ciudad Juárez
(María Eugenia López, 2009)

The nature of the reform places responsibility on teachers to find ways to support the new curriculum. This results in a wide variance among programs. This section describes the program environments and the efforts of teachers in Juarez to meet the new reform requirements. Juarez in on the border of the United States and with El Paso is the largest metro-plex on the border. Like many of the border cities Juarez has a high illiteracy and dropout rate.

As a teacher in Mexico, I am aware of the many changes in the country's economic development and the importance of technology in education. Our schools have gone from schools in poverty to schools preparing children for a digital future. It is very exciting to see my country grow in a competitive economic presence in the world. There is a large variation among schools across Mexico. I can only describe the efforts we are making in Juarez to insure our children are ready to move into the ever demanding need for technology . Following is some specific information about how our system is organized and where Juarez fits into our national preschool programs.

- Early childhood education in Mexico is mostly federally supported. There are four main institutions in Juarez:

- Instituto Mexicano del Seguro Social (IMSS).
    - Maintains its own 1562 nurseries in Mexico attending 228,503 children between newborn and up to 4 years of age (see breakdown by States here: www.imss.gob.mx/prestaciones/guarderias/númeroguarderiasrm.htm).
    - Private nurseries adhered to IMSS' program. There are approximately 38 in Ciudad Juárez.
- Secretaria de Desarrollo Social (SEDESOL). Subcontracts individuals to set up nurseries as own businesses. http://www.sedesol.gob.mx/index/index.php?sec=802311.
- Secretaria de Educación Pública (SEP).
    - Centro de Desarrollo Infantil (CENDI). Supported by the Secretary of Education, the CENDI program maintains and runs over 100 nurseries across Mexico, with 10 in the State of Chihuahua and 2 in Ciudad Juarez.
    - Private nurseries adhered to SEP's program
- Instituto de Seguridad y Servicios Sociales para los Trabajadores del estado (ISSSTE).
    - Maintains its own nurseries using SEP's "Programa de educación inicial"
    - Subcontracts private individuals to set up private nurseries under SEP's program

Additionally, in Ciudad Juárez there is one municipal nursery (Eva Sámano de Echeverría"), and about 50 private nurseries, which – in principle- must adhere to one of the official educational programs, but in reality, many do not.

One major change in our preschool programs in Mexico is a move from the division of social and educational programs. The pre-K programs are divided in two distinct categories in Juarez:

1. Programa de Educacion Inicial (SEP). Established in the late 1990s and under current renovation, it is applied with children between 0 and 3 years of age.
2. Programa de Educacion Preescolar 2004 (SEP). Based on research performed in Mexico and on theoretical fundamentals. Applicable for kids between ages of 3 and 6 years of age (in Mexico preK education in levels 2 and 3 -from 4 to 6 years of age- is now mandatory). Currently, assessment plans are being developed.

Information on the reform work in Juarez may be accessed on the following web sites:

http://intrauia.iberopuebla.edu.mx/repository2/312/o1275/PROGRAMA%20DE%20EDUCACION%20PREESCOLAR%202004.pps

and

http://www.escuelasenaccion.org/conocimiento/archivos/EDUCACION%20PREESCOLAR.%20CONTRUCCION%20COLECTIVA.ppt.

The following section includes information from the Centro de Desarrollo Infantil in Juarez. This section gives an overview of how technology is used in these programs.

In my program we have just installed new computer centers in our classrooms. This picture shows two of our children in front of our new computers. They are discussing two books and if these stories will be on the computer. This is very different from 10 years ago when there were no computers for children in the classroom. My children are very proud to have computers in their room and my parents want their children to learn about technology so they can become better educated. The reform in education is moving rapidly here. It is hard for our teachers to learn all they need to know about computers and plan for technology use. I do use different forms of technology in my programs.

At one of the Ciudad Juárez CENDIs, for instance, there are computers, projectors, TV sets, printers, copy machines, fax, internet and other devices which are used in the daily educational activities. This equipment was obtained through personal efforts of the educators and thanks to a donation from a private school. All schools do not have this equipment. In this center there was a high level of computer use at home so the parents wanted it to be used in the school. Our typical preschool class size is 40 and approximately 35 out of these children have a personal home computer.

At this point computers are primarily used for computer educational games with our children. Some of the topics mandated by curriculum reform here are available to support our new curriculum. One such site is "Pipo" (http://www.pipoclub.com/) which is for Pre-K Level 3 (5-and 6- year old children). It is used to implement some topics of the "Programa de Educacion Preescolar 2004" which includes geography, math, human body, animals, nature, etc. This site is primarily a skill development site. The children work on this program individually but with the number of children in our classes this means each child only gets two turns a week.

We also have a projector that children use with the computers. We sometimes assign homework that requires the children to work with their families to take pictures to support "didactic situations". One example was a project entitled, *How do we improve the neighborhood park?* The children took pictures with their parents of the park, came up with ideas for improvement, wrote down the ideas and submitted their photos on USB memory sticks or CDs. These pictures were then shown in class to complete the lesson. We also have the children make videos at home and at school and show them during class time to either sing along with or have children tell their stories about activities. The use of these videos with children's songs is a favorite of the class.

We also use technology when we show movies, about once a month. Our centers do have internet access but the children's use is limited at this point. While we consider ourselves on the way to reforming technology use and education in our programs we also know that there are many others who do not have the equipment or training to implement these ideas. Some schools have no technology and other schools have more and better equipment. Technology use depends on the type of school and the teachers. Until the government mandates technology as part of the curriculum it will have little chance of infiltrating all of our schools. Funding is always a problem and as new technology is developed this access issue will become more evident.

Additional Issues, Controversies and Problems

1. *Gender Cultural Issues:* Technological innovations have generally not been readily available to females in traditional societies especially when these innovations challenge or imply changes to long held customary designations of professions along gender lines(West, 2000). The Mexican culture still follows the traditional gender roles of the mother in the home and the father working to support the family. Until recently females were not encouraged to move into fields like science and technology. It is necessary to understand that social, cultural, economic, and political factors define how computers are perceived, utilized, and dispersed, and experienced in traditional societies. Since Mexico is a country of great diversity with large groups of indigenous populations this wide cultural variety impacts how technology is used. An understanding of computer technology and its socio-cultural, political, and economic consequences in developing nations may shed some light on impediments for females as they venture into this traditional, cultural, gender-biased world of technology. Since the economic spurt had been so dramatic in Mexico the gender roles are forced to change to accommodate growing educational demands. There are socio-cultural, political, and economic consequences with which these cultures need to grapple.

   Introduction, exposure, and equal access to technology, precisely computers to young children in their early education will assist in diminishing gender preferences and bias toward professions defined along gender lines. Technology-driven curricula that affirm equal education and participation from the formative stages will effectively make computers routine in the lives of both males and females perceptions and attitudes would gradually change, allowing for gender equity in computers and computer technology (West, 2002). Realities of modem global interdependence in such areas as commerce and education, and a need for experts in technology may determine strategic directions for educational curricula in developing countries.

2. *Access:* As within the United States there is a large gap among socioeconomic classes which influences access to technology. The quality improvement initiative affected a relatively small number of preschools. In addition, the preschools that received quality improvement funds in the first 2 years of the program were relatively larger and had more resources to begin with than other preschools. The national curricular reform was created after a comprehensive process of obtaining input from teachers, directors and early education officials from across all the Mexican states. This process resulted in the implementation of an open curriculum based on comprehensive notions of the multiple domains of competencies in early childhood development. The curriculum requires high levels of teacher initiative and reflective practice (Yoshikawa, Mc Catney, Meyers, Bub, Ramos, & Knaul, 2007). Technology use is determined by individual schools and teachers. This increases the gap among programs. Disparities in resources for basic education are evident between urban and rural areas (US Department of Education, 2003). The nature of the new reform in all areas, including early childhood education, place the curricular responsibility on the teachers which intensifies the difference among programs. The implementation of the curriculum may vary across the country, as the government has tried to tailor the core curriculum to address the ethnic and cultural diversity of students and the special needs of Mexico's indigenous population and students living in remote areas (Husén and Postlethwaite,1994). This respect for different cultural beliefs is admired but also causes some groups of people to remain in the traditional environment which

often ignores technology. It would seem that the use of technology would hold the answer to educating the rural populations of Mexico but funding remains an issue for these areas. There are still some remote areas where there are no highways and the only way into a village is through the use of an all-terrain vehicle or walking. This increases the probability of limited access to technology.

3. *The Teacher Training Gap between Education and Demands of the Growing Economy: Funding and adequate resources may be lacking in transition countries.* "The Fact of the matter is that the neediest states, even when they act in good faith, lack adequate resources to ensure that institutions, services, facilities, and staff are available to children and families" (Ensalaco & Majka, 2005, p. 16). Governments often lack financial resources to support institutions that provide training for teachers. The quality of training can affect the quality of learning environments, teacher-child interactions, resources, and school readiness.

Primary school teachers are now required to have college degrees (Gadel, 1997). In upper secondary school, most teachers have a four-year degree. Educators in institutions of higher education also have a four-year degree, although some institutions require a master's degree, as well. Technology is included in teacher education but the growing demand for a techno-literate population is growing faster than the changes to teacher preparation. As Mexico continues to increase their technological resources the training of teachers must keep up in order to prepare citizens that are capable of succeeding in the new economic world. Early childhood has changed from a social services focus to an academic focus which demands technology integration and education. The pace of change in universities is painfully slow as all policies go through a long and tedious review system. If universities are to prepare teachers for the challenges of technology education then new approaches to teacher training are needed.

The standard for recruiting teachers varies among the states. Some states require a competitive examination before appointment, whereas other states base their decisions solely on candidates' qualifications and performance. In remote regions, teacher qualifications may be lower, and some practicing teachers may not have adequate pedagogical training. The requirements for indigenous education are culturally sensitive, partially because instruction and textbooks are in native languages and dialects. However, how these programs will address the changes in technology is not specified.

4. *Border Issues:* While the United States and Mexico are considered different countries they share a common 2,000-mile-long border area where the socio-economic dynamics of two interacting cultures have a strong influence on the educational resources for young children. The border regions are a mix of two cultures, many languages and many traditions and therefore have become almost a separate educational culture. Is it usually an easy task to separate national identities in countries that are geographically linked. This is not the case on the borderland between Mexico and the United States. There are more than 800,000

people crisscrossing this area legally every day, some walking, more driving, not to mention the 4,600 or so who jump the fence and get caught a few minutes or hours later. This unique environment brings concerns about the discrepancy between two countries standards and educational expectations. The Mexican population speaks predominantly Spanish in the border area so language compounds the educational issues.

There are 800,000 children living along the California-Mexico border alone. These "border kids" reflect the region's diversity and offer a glimpse into the state's dynamic cultural future. Half of all children living along the border are in an immigrant family—households with at least one parent born abroad. Of the border kids in immigrant families, 81% are U.S. citizens. Children in immigrant families often face similar challenges as those faced by low-income children, including below-average health outcomes and academic performance. Immigrant parents often have to deal with the added challenges of limited English proficiency and different cultural norms as they work to provide their children with the resources and opportunities they need to succeed.

New academic standards in the United States, which outline learning achievement expectations, are required in border as well as all other states. Significant variation in test score performance exists among ethnic groups, however, both along the border and statewide. Support educational programs such as pre-kindergarten and effective practices in K-12 to accelerate the time it takes for English Learners to master English and be redesignated as Fluent English Proficient. These issues along with limited access to technology are not addressed by either country.

The Secure Fence Act authorizes the construction of at least two layers of reinforced fencing in high-crossing and high-risk sections along the border. This includes around the border town of Tecate, Calif., and a huge expanse stretching from Calexico, Calif., to Douglas, Ariz., which is virtually the entire length of Arizona's border with Mexico. Another section would stretch over most of the southern border of New Mexico. An additional section will wind through Texas, from Del Rio to Eagle Pass, and from Laredo to Brownsville. The Department of Homeland Security were required to install an intricate network of surveillance cameras on the Arizona border on orbefore May 30, 2007. The barrier will leave around 1,300 miles of border uncovered. The entire fence was scheduled to be completed by the end of 2008.

As we begin the 21st century, one of the most prominent features of our time is globalization, which has led to a greater sense of interconnectedness than ever known before. While this has led to tremendous advances on many fronts, society continues to face great challenges with regard to poverty, human rights, education, health care, and violence across the globe (Lutterman-Aguilar, 2000). How this fence will impact the relations between Mexico and the United States is a question that effects all aspects of education and economy.

Summary

Technology has forced a major change in the Mexican economy. This change, from a "developing country" into a techno-transformation country, has demanded educational reform in early childhood and across the continuum of education. The system of early education has many agencies and layers that address the different needs of the Mexican population. This is like other countries you have read about as technology has and is leading the educational reform in early childhood. Technology standards are required in primary through secondary education and will soon follow in early childhood. Presently the implementation of technology

varies according to the type of program and the teachers working in the programs. The rapid change has left early childhood behind in technology training for teachers and classroom equipment. Some teachers have taken the initiative to provide technology in their programs. As Mexico continues to climb the economic global ladder of competition it is expected that all programs will include technology use and training.

Vision

The last 9 years have indicated that Mexico is fast becoming a competitor in the global technology arena. The reform efforts support change in educational policy and practice. We think Mexico will surpass many of the other preschool educational systems in technology use once the issues of rural access are solved.

Some Questions for Reflective Practitioners

1. Mexico has a diverse population that includes indigenous groups, many languages, and socio-economic status. In an attempt to meet the needs of all groups of people the Mexican government has implemented different forms of early childhood programs. How does this approach compare to your country? What are the similarities ?
2. The current reform places a lot of responsibility on the teachers to develop delivery approaches to early childhood programs. How does this compare to the program in which you are currently working?
3. The rapid demands of technology have demanded cultural and societal changes in Mexico. After reading this chapter what would you describe as the major cultural values of Mexican early education?
4. How would you insure that all areas of Mexico receive equal technology access?
5. Compare you curriculum to the newly revised Mexican plans. What could you identify as common, global issues in early childhood curriculum?
6. The changes in educational policy to address the needs of the Mexican population provide an overview of the reform efforts. What policies does you country support for early childhood education?
7. What types of social programs do your schools provide for teachers and children of young children?
8. After reading what María Eugenia López describes as her program use of technology compare and contrast your use of technology in your program with hers.
9. Do you believe there are gender issues in your country concerning technology? Describe some of your experiences to support your answer.
10. The border issues have been controversial across both countries. How would you approach these issues in your classroom? When a child from Mexico enrolls in your program what will you do to insure objective interactions?

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