FIRSTMATH

CHILE

NANCY LACOURLY & M. LEONOR VARAS
CENTRO DE INVESTIGACIÓN AVANZADA EN EDUCACIÓN
UNIVERSIDAD DE CHILE

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Chile: global statistics (2009)

Population: 16.5 million
Central region: 90%
Santiago: 6.7 million

Alphabetization: 95.7%
Fertility: 1.88
Life expectancy: 74 (male) and 81 (female)
Gross Domestic Product: US$ 15,000
Income per capita: USD 7,000 per year
Unemployment rate (feb-apr 2011): 7%
Public expenditure on education: 3.9% of GDP

Poverty: 13.7%
Gini coefficient: 0.5
Ratio between per capita income of richest 20% of the households and that of the poorest 20%: 14 times
Chile: political context

After the 1973 military coup, new decentralization and privatization policies were implemented.

• In 1980, primary and secondary education were transferred from the Ministry of Education to the 346 municipalities.
• Government grant paid according to the average monthly attendance of students, which is an incentive for schools to keep their students attending classes.
• Diversification of higher education, which is divided into universities, professional institutes and technical training centers.
• Impact on initial teacher training, which is not exclusively a university career. This indicates the low value attributed by the state to the teaching function.

After the recovery of democracy in 1990, the state resumed its role as responsible for the quality and equity of education. However, it kept the grant funding system.

• Tremendous expansion of educational opportunities, especially for vulnerable sectors: coverage and material and educational resources.
Consequences

• Inequities in the education system, which is high social segmentation.
• Three types of administrative dependence of schools: municipal, private and chartered (subsidized private), that increases segregation.
• Learning achievements are still unsatisfactory, both in terms of learning expected by the national curriculum, and compared to international standards.
• Declining public spending on education. The decrease has not been uniform: Secondary and high education are the most disadvantaged, forcing the free traditional universities to charge.
• The 2006 “penguin revolution”. Secondary students ask for higher quality and more equity. School strikes and protests were in part an expression of a level of frustration about the levels of inequity in the school system.
• The emerging challenge was to reach an educational system with quality and fair opportunities for all.
• The penguin revolution has sparked a political debate that continues to this day, questioning the quality of the school system.
Expenditure in education

Public Expenditure by level of education (millones pesos)

Source: Mineduc

Percentage of GDP in education

Source: MINEDUC
Overview of the school system

• 1970: 8 years of mandatory schooling (literacy rate 95.7% in 2002 census)
• On August 26, President Ricardo Lagos signed and submitted the law that ensures 12 years of schooling for all children.
• 13 years (with kindergarten) being discussed in the Congress.

Educational units and Administrative dependence

<table>
<thead>
<tr>
<th>ISCED level</th>
<th>Total</th>
<th>Municipal</th>
<th>Private subsidized</th>
<th>Paid Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten/preprimary</td>
<td>6,019</td>
<td>2,722</td>
<td>2,769</td>
<td>528</td>
</tr>
<tr>
<td>Primary/Basic</td>
<td>10,638</td>
<td>5,411</td>
<td>4,780</td>
<td>447</td>
</tr>
<tr>
<td>Secondary</td>
<td>3,746</td>
<td>1,315</td>
<td>2,047</td>
<td>384</td>
</tr>
<tr>
<td>Total</td>
<td>20,403</td>
<td>9,448</td>
<td>9,596</td>
<td>1,359</td>
</tr>
</tbody>
</table>

Enrollment and administrative dependence

<table>
<thead>
<tr>
<th>ISCED level</th>
<th>Total</th>
<th>Municipal</th>
<th>Private subsidized</th>
<th>Paid Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten/preprimary</td>
<td>657,800</td>
<td>250,314</td>
<td>337,204</td>
<td>70,282</td>
</tr>
<tr>
<td>Primary/Basic</td>
<td>4,321,130</td>
<td>1,870,104</td>
<td>2,190,344</td>
<td>260,682</td>
</tr>
<tr>
<td>Secondary</td>
<td>1,852,652</td>
<td>800,222</td>
<td>917,458</td>
<td>134,972</td>
</tr>
<tr>
<td>Total</td>
<td>6,831,582</td>
<td>2,920,640</td>
<td>3,445,006</td>
<td>465,936</td>
</tr>
</tbody>
</table>
Overview of the school system

![Graphs showing educational units and enrollment trends over years.]
Segregation

The Chilean school system is one of the most segregated in the world:

• The likelihood of social mix is very low. A Chilean student of higher socio-economic level will have fellow students with the same status during all his studies. Similarly a student of a lower income group will be educated with peers just like him.

• The parents who cannot afford a private school (90%) choose schools for their children with price (the most they can pay) to ensure social segregation.

• “Residential“ segregation: poor mobility, explained by geography as well as by cultural attachment to the region. A student who graduates from a particular school is likely to study and then work in the same place. This lack of mobility limits the professional improving of teachers.
A survey

• 2011, five years after the **penguin revolution**, a recent survey shows that, in the opinion of secondary students, the biggest problem of primary and secondary education is the quality of teachers (teacher quality: 34.5%, discipline: 30% and resources: 25.3%).

• Even worse, they think that teachers have less power than their parents or themselves (7.3%: teachers, 15%: parents, 35.6%: Government 35.6% and 65%: students).
Curriculum & evaluation

• There have been several curricular changes since 1980. Among them, a flexible curriculum in schools, with little government control, giving some freedom to the teachers.
• In 2009, a new curriculum framework with “minimum required contents” and fundamental objectives.
• In 1988, the Education Information and Quality Measurement System (Sistema de Información y Medida de Calidad de la Educación, SIMCE) is created, to assess all students in language and math in 4° and 8° grades, alternating every other year.
• In 1994, the 10° grade is added.
• Beginning in 2006, 4° each year and alternating assessment grades 8 and 10.
• In 2010, the assessment in English for grade 11° was added.
• The SIMCE performance of each individual school are publicly available.
• Parents can in principle choose their children’s school on the basis of their SIMCE performance. But in practice this is not the case.
• SIMCE results have an impact on teachers salaries.
Outcomes

• In the international comparisons, generally Chile obtained bad results: no improvements despite the continuing effort for improving student achievement (software, network link, many textbooks).

• Nevertheless, achievements have improved in language / reading have improved, but not in math.

• In PISA 2009, Chile took place 44 of 65 countries in language / reading (with an average of 493 points), and place 49 in math (with 421 points, the best among Latin American participating countries.)
Level 1: Students are able to answer clearly defined questions, involving familiar contexts where all relevant information is present. They can identify information and carry out routine procedures according to direct instructions. They can perform obvious actions.

Students placed at this level are unable to conceptualize or deal with complex situations, developing and using models. They are unable to interpret and recognize situations in contexts that require only direct inference.

Source: database OECD PISA 2009
A young teacher in her second year of teaching, teaching third grade students in a poor commune
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Teaching Staff</th>
<th>Beginning Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>182.220</td>
<td>20.401</td>
</tr>
<tr>
<td>2008</td>
<td>176.472</td>
<td>16.315</td>
</tr>
<tr>
<td>2007</td>
<td>174.882</td>
<td>13.490</td>
</tr>
<tr>
<td>2006</td>
<td>171.742</td>
<td>11.850</td>
</tr>
<tr>
<td>2005</td>
<td>170.261</td>
<td>12.725</td>
</tr>
</tbody>
</table>
### Chile - Current Teaching Staff 2009

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Gender</th>
<th>Administrative dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Total</td>
<td>Male</td>
<td>52,393</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>129,827</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>Male</td>
<td>1,792</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>18,804</td>
</tr>
<tr>
<td>Special</td>
<td>Male</td>
<td>659</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8,473</td>
</tr>
<tr>
<td>Primary</td>
<td>Male</td>
<td>24,146</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>72,729</td>
</tr>
<tr>
<td>total Secondary</td>
<td>Male</td>
<td>23,999</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>28,334</td>
</tr>
<tr>
<td>Secondary</td>
<td>Male</td>
<td>15,127</td>
</tr>
<tr>
<td>Humanist</td>
<td>Female</td>
<td>19,979</td>
</tr>
<tr>
<td>Secondary technic</td>
<td>Male</td>
<td>8,872</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8,355</td>
</tr>
<tr>
<td>Others</td>
<td>Male</td>
<td>1,797</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1,487</td>
</tr>
</tbody>
</table>

Source: Ministerio de Educación
## Retention of beginning teachers

<table>
<thead>
<tr>
<th>Years on the Job</th>
<th>Primary teachers</th>
<th>Math beginning teachers ISCED 3</th>
<th>Total math ISCED3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Retention Rate</td>
<td>Number</td>
</tr>
<tr>
<td>1\textsuperscript{st} Year (2005)</td>
<td>12.725</td>
<td></td>
<td>499</td>
</tr>
<tr>
<td>2\textsuperscript{nd} Year (2006)</td>
<td>10.256</td>
<td>81%</td>
<td>383</td>
</tr>
<tr>
<td>3\textsuperscript{rd} Year (2007)</td>
<td>8817</td>
<td>69%</td>
<td>337</td>
</tr>
<tr>
<td>4\textsuperscript{th} Year (2008)</td>
<td>7931</td>
<td>62%</td>
<td>299</td>
</tr>
<tr>
<td>5\textsuperscript{th} Year (2009)</td>
<td>7216</td>
<td>57%</td>
<td>272</td>
</tr>
</tbody>
</table>
Teachers (in-services) negative aspects

In public and charter schools

- Poor training
- Low salary (US$10,000 to 20,000 per year)
- Little valued profession
- High workload
- The state and the population blame them for the poor results
- High levels of stress
- Insecurity in the classroom
- Poor image of their professional status
Teachers (in-services) positive aspects

- The teachers give importance to its educational mission and for them it is important to be head teacher of a course.
- Undertake globally: for them, "educate" is not just "teach", even if not well recognized by our consumerist society.
- They would like to improve, Looking for opportunities to learn more, including if they have to pay for courses (80% since 2000).
- Training in school with peers and exchange of teaching practices.
- They are loving and patient with students.
- They like to teach, motivated and they will not change their job (74%).
Teachers evaluation

The Ministry of Education evaluates public school teachers:

• The measurement is based on professional performance standards

• Instruments: Portfolio, Self-Assessment Guideline, Interview on teaching, video of a class and evaluation of their superiors about their teaching practice.

• In a first election, there are no tests.

• Selected best teachers can postulate at Accreditation program for the Allocation of Teaching Excellence: initiative of the Ministry of Education whose aim is to strengthen the quality of education through the recognition of professional merit. The measurement is the result of a test based on disciplinary and pedagogical knowledge.

• The evaluation has salary implications
Schools evaluation: SNED
(National Performance Evaluation System, Sistema Nacional de Evaluación del Desempeño)

• Since 1990, to contribute to improving the quality of education, a national system of performance assessment measure gives economic benefits to the best public and charter schools.

• The benefit goes to the best performing schools and is distributed among teachers of the selected establishments. The assessment is mandatory for all charter schools.

• A performance indicator of each school is based on factors such as effectiveness (SIMCE), initiative for pedagogical innovations, equality of opportunity, and integration of teachers and parents in the school activities.
College selection

National selection test for high education

• In 2003, the selection test for entry to high education shifts from a skills-based test (PAA) to a knowledge test (PSU).
• Math and language mandatory for all students. Science or history are required for some careers.
• The increased coverage of education, along with the implementation of the new screening criteria have increased the socio-economic gap.
• The emergence of informal precollege private academies to train for the PSU have also increased the gap.
Teachers education

<table>
<thead>
<tr>
<th>2008</th>
<th>University</th>
<th>Programs</th>
<th>Institutions</th>
<th>Enrollement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary education</td>
<td>Traditional</td>
<td>42</td>
<td>17</td>
<td>8994</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>117</td>
<td>27</td>
<td>11490</td>
</tr>
<tr>
<td></td>
<td>Profesional</td>
<td>18</td>
<td>6</td>
<td>2340</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>177</td>
<td>30</td>
<td>23024</td>
</tr>
<tr>
<td>Secondary education</td>
<td>Traditional</td>
<td>139</td>
<td>21</td>
<td>24607</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>208</td>
<td>24</td>
<td>23895</td>
</tr>
<tr>
<td></td>
<td>Profesional</td>
<td>40</td>
<td>5</td>
<td>1349</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>387</td>
<td>50</td>
<td>49851</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>564</td>
<td>80</td>
<td>72875</td>
</tr>
</tbody>
</table>

From CEPPE, 2010

- Most primary school teachers come from low prestige and poorly regulated establishments
- Students admitted have low academic level.
Teachers selection
Institutions with at least 8 students with PSU data

64% of the students come from establishments with average PSU score less than 500 points.

<table>
<thead>
<tr>
<th>PSU Mean</th>
<th>Institutions</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 450</td>
<td>9</td>
<td>774</td>
</tr>
<tr>
<td>451-500</td>
<td>7</td>
<td>300</td>
</tr>
<tr>
<td>501-550</td>
<td>12</td>
<td>496</td>
</tr>
<tr>
<td>more than 550</td>
<td>2</td>
<td>119</td>
</tr>
</tbody>
</table>

PSU measure between 150 and 850, mean 500 & standard deviation 100
Teacher education

• In 2009 and 2010, standards were developed for initial training of teachers of Primary Education of 1 to 6 in the areas of Basic Language and Communication, Mathematics, History, Geography and Social Sciences, and Natural Sciences.

• At the end of 2011, standards will be published for secondary training teachers.
Teachers education improvements

Important quality issues
• Attract the best students
• Ensure good initial and in-service training
• Retain the best teachers

“INICIA” program created by the Development, Experimentation and Pedagogical Research Center (CPEIP) of the Ministry of Education, with the mission of designing, implementing and evaluating programs that promote the professional development of teachers and principals based on the educational policies of the Ministry of Education:
• Standards for the teachers training (primary and secondary with specialty).
• Professional habilitation: National test for all the new teachers (like medicine).
• Support Program for Teacher Education Institutions. Provide resources to finance renovation projects of faculties of education to improve teacher training
• Strategies to support beginning teachers‘ professional integration for strengthening the quality of the first experience of professional education through the establishment of a mentoring system.
• Grants
INICIA: Knowledge test results, according to PSU

- Results of INICIA test directly related to the PSU score of examinees

<table>
<thead>
<tr>
<th>PSU</th>
<th>Percentage of correct responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>450 o menos</td>
<td>40%</td>
</tr>
<tr>
<td>451 - 500</td>
<td>45%</td>
</tr>
<tr>
<td>501 - 550</td>
<td>51%</td>
</tr>
<tr>
<td>Mayor que 550</td>
<td>63%</td>
</tr>
</tbody>
</table>
The novice teachers

Currently,
• No induction for in-service teachers education
• No programs to support on the job teacher training.
• No systematic program to improve teachers’ math skills: only isolated training courses.

But,
• The “INICIA” program has strategies to support the professional integration of young teachers, aimed at strengthening the quality of the first experience of professional education through the establishment of a mentoring system.
• The new beginning teachers department: http://www.docentesnoveles.cl/
• A web site with guidance, resources and material for teachers, students and principals: http://www.educarchile.cl/
Teacher participation in union and government organizations

- Colegio de profesores: union with over 100,000 members (≈50%). National coverage with plural ideology and independence from government authorities.

- Beginning teachers department: a new department that supports the alleviation of weaknesses in teachers training.

- Contribute to the effective and proper integration of young teachers, in the reality of educational system and classroom.
Conclusions

• Chile’s economic growth has failed to improve the quality and equity of the education. However, the state is in the process of improvement, especially in teacher training.

• The teacher is the key actor in the process of educational transformation, which implies the importance of young teachers.

• The implementation of FIRSTMATH study is feasible in Chile and will be very relevant to the current process of improving education.
1 June 2011: 30,000 school and college students and teachers, including university rectors and academics, demonstrate in Santiago’s main avenue. Their slogan: "No to the Privatization of Education."
References

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- Beatriz Avalo, Claudia Matus, 2010, La formación inicial docente desde una óptica internacional, IEA TEDS-M, Gobierno de Chile.
- Carmen Sotomayor, Horacio Walker, Políticas de formación continua docente en Chile.
- Panorama y propuestas
- Leonor Varas et al., The opportunities future primary teachers face for getting prepared to teach mathematics in chile , Revista Calidad en la educación, 29 2° Semestre año 2008

BASES DE DATOS DE LOS SITIOS WEB
- Ministerio de Educación www.mineduc.cl/
- Sistema de Información y Medición de la Calidad de la Educación (SIMCE ) www.simce.cl/
- Centro de Perfeccionamiento, experimentación e investigaciones pedagógicas (CPEIP). www.cpeip.cl/
- Nucleo docentes www.nucleodocentes.uchile.cl/
- Departamento de evaluación, medición y registro educacional (DEMRE): www.demre.cl/.
- Colegio de profesores: www.colegiodeprofesores.cl/
- Departamento de jóvenes del colegio de profesores: http://www.docentesnoveles.cl/