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Decentralization and Privatization in Chile: A Mixed Method Approach for Understanding Social Reproduction Throughout Education

Author
Morales Cardenas, Paulina Veronica

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Decentralization and Privatization in Chile: A Mixed Method Approach for Understanding Social Reproduction Throughout Education.

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by

Paulina Verónica Morales Cárdenas

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ABSTRACT OF THE DISSERTATION

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by

Paulina Verónica Morales Cárdenas

Doctor of Philosophy in Education

University of California, Los Angeles, 2020

Professor Carlos Alberto Torres, Chair

This mixed methods study explores how market-oriented policies, specifically privatization and decentralization of the educational system in Chile have impacted students' academic achievement since the Change in the Constitution in 1980. First, using teachers' interviews I identify variables that influences students' academic achievement and organize them by actor involved in the schooling process. From this initial qualitative analysis, it is developed a three level hierarchical linear model to identify how much of the variance in predicted test scores is determine by the variables identified by the teachers using Education Quality Measurement System (SIMCE) database for second grade high school students.

Following the social reproduction theory developed by Pierre Bourdieu education is reproducing social inequalities rather than providing equal access to education quality and therefore promoting social mobility. This study finds that teachers identify four actors involved in the educational process: family, student, teachers, and school. Teachers rec-

ognize more frequently variables related with students' background characteristics rather than teachers or school. Additionally, they name more variables associated with themselves than in the other three actors involved in the educational process. This findings are supported by the multilevel analysis, in where students' characteristics explain the largest percentage of variability in SIMCE scores (78.1%), meaning that within the same classroom students differ considerably from each other in SIMCE scores. The second largest percentage is from the school (18.3%), which confirms the idea that within the same school, the differences among classrooms are minimal, confirming the idea that Chilean school group students from similar background characteristics.

The dissertation of Paulina Verónica Morales Cárdenas is approved.

Jeffrey Guhin

José Felipe Martínez

Richard Desjardins

Carlos Alberto Torres, Committee Chair

University of California, Los Angeles

2020

Para Violeta por acompañarme y ser el motor de este trabajo.

Para mi familia, por siempre apoyarme y creer en mi.

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VITA

2010 B.A. (Exact Sciences), Universidad de Chile.

2012 B.A. (Education), High School Teacher in Mathematics and Physics, Universidad de Chile.

2014 M.A. (Education) University of California - Los Angeles.

2016 Research Assistant, Labor Occupational Safety and Health Program, University of California - Los Angeles.

2016 Teacher Assistant, Associate, Fellow Psychology Department, University of California - Los Angeles.

CHAPTER 1

Introduction: Education and Inequality in Chile

A otros le enseñaron secretos que a ti no
a otros dieron de verdad esa cosa llamada educación
ellos tenian esfuerzo, ellos tenian dedicación
y para que, para terminar bailando y pateando piedras.
Los Prisioneros - El Baile de los que Sobran

1.1 Motivation

I grew up in one of the most segregated countries in Latin America, Chile. I never noticed the privilege that I had while growing up. Because of my parent's socioeconomic status, I was given an advantage when they enrolled me in a private school at the age of 4 years old. Having the opportunity of going to a private school, also gave me tools to study in one of the best universities in the country, which was fundamental for coming to UCLA to pursue my PhD in Education. Being aware of my privileges, made me realize that when students come from disadvantaged environments, the school system is perpetuating those disadvantages rather than providing equal opportunities for all students.

Education of young students has been part of my identity since I was 18 years old when I decided to study to be a high school teacher. When I did one of my internship as a teacher in a low-income school I realized that not all students in the country had

the same opportunity for developing their own pathway. I clearly remember a group of four highly motivated students when the school year began in 2011, but after a few months into the semester, the group could not continue with their motivation to learn. The classroom environment was not appropriate for their academic development. Almost all of the students arrived late, or simply did not care about their own learning. When I had the opportunity to talk with them individually, they told me that on average their educational expectations were very low, therefore they were not motivated to study and learn. One day, I also had the opportunity to talk with the highly motivated students, and ask them about their change in participation, and the answer was that it was impossible for them to stay motivated when your classmates (around 40 students) are not; so they ended up in the same position. I could not help them to stay motivated, and at that point I saw that it was nor fair for them to get lost in the educational system that was not supporting them to improve their own well-being.

Low-income students are caught up in an educational system that does not support them. They start in the school system with great disadvantages, usually associated with their background characteristics (Barr, 2015, Galindo and Sonnenschein, 2015, Morgan et al., 2016). Also, quality is restricted to school type[1] (Ortega et al., 2018), which correlates with family characteristics. Those disadvantages are reflected in their low scores in one of the most important standardized tests in the country: Education Quality Measurement System (SIMCE, Sistema de Medición de la Calidad de la Educación). Results show that in average, public schools have lower scores than private or private-subsidize schools.

[1] In Chile there are three school types: private, private-subsidized and public.

This dissertation grows from my personal experiences as former teacher in Chile, and the constant looking of improving students' learning outcomes. Having the chance to develop my research around the educational system in Chile, was a journey in which I was personally involved as a former high school teacher. My involvement in the study lies in my understanding of the population under analysis by first-hand experience.

1.2 Background: The Chilean Context

When we talk about Chile, it is possible to distinguish a break point in history. When the military overthrew the democratic elected government in Chile on September 11th of 1973, and installed General Augusto Pinochet as the new President the country changed in every aspect. One of the most recognizable changes was the economic model. During Salvador Allende government the idea was to shift the capitalist model to a socialist model; he believed that capitalism itself created and maintained poverty in the Third World, because it supported the idea of workers being loaded with extra work (Oppenheim, 1993). But, Allende socialist policies were shifted to market-oriented policies when General Pinochet took power in 1973. He worked with the Chicago Boys[2] to implement market-oriented policies focusing on economic growth, and following the World Bank policy recommendations (Bonal, 2004). One of the main ideas established by the Chicago Boys was to promote the reduction of spending in the public sector by the state to fight the debt crisis; therefore, the educational sector was privatized.

[2]The Chicago Boys were a group of Chilean students from University of Chicago trained in the free market model, advocating widespread deregulation, privatization, and other free market policies for closely controlled economies.

When Chile transitioned to a market-oriented educational system in 1981 the government created a new type of school, the private-subsidize schools[3], which were able to find support from the municipalities, the local governments. It was also during the same time that the state transferred the responsibility of financial decisions to the municipalities, before that it was the state that financed public education in the country. Each municipality would be responsible for giving schools vouchers for every student enrolled, for both public and private-subsidized schools. The difference between them was that private-subsidize schools were private administrated and could profit.

The idea behind those new schools was to create competitiveness, and therefore schools would improve their quality, which would be reflected by increasing their SIMCE scores. However, nowadays the reality is completely different. School administrators have been developing plans to increase scores by preparing for the test rather than improving overall education quality, as a consequence scores in standardized tests are being polluted (Haladyna et al., 1991). Standardized tests scores can be manipulated through test preparation; schools principals and teachers are aware of the benefits of having higher scores. Therefore, they are forced to take measures in post of increasing scores.

In Chile, SIMCE scores are not different, teachers tent to prioritize subjects and topics that are evaluated in the tests, such as mathematics, verbal, and science. Having high or better scores for a private-subsidized or public school means an increase in salary for teachers and functionaries. The government created the Voucher for Academic Excellence (SNED, Subvencion por Desempeño de Excelencia) in 1996, it purpose is to select every

[3]Private schools that receive a voucher for each enrolled student.

two years the best schools in the region. Its goal is to stimuli and reward actions that would improve education quality in public and private-subsidized schools throughout an extra voucher. The excellence is given to schools that have good scores and it consists of a monetary bonus. As a consequence, teachers who do not teach subjects evaluated by SIMCE are willing to loose their weekly hours in benefit of increasing scores by preparing students for the test. Are the practices implemented by schools looking to improve the quality of education? or are simply interested in increasing SIMCE scores in order to obtain this bonus? From the interviews, some teachers claim that it does not measure students' abilities or overall learning, and that schools usually train students for the test.

During the military dictatorship (1973-1990), the government implemented four main ideas in the educational system (Cornejo Chávez and Redondo Rojo, 2007):

1. Change in the previous Constitution, implementing a new one base in market-oriented policies. The Constitution of 1980 establish a new role for the state, giving the responsibility of education to private holders and municipalities.

2. Starting in 1981, each municipality administer public school resources within their geographic limits.

3. Private-subsidized schools were created, giving the right to private holders to open schools for profit and receive the same subsidize than a public school.

4. The state reduced funding of public universities, and allowed the creation of private universities.

When the military dictatorship ended in 1990 the following governments did not de-

crease the gap among students achievements. The Constitution is still the same established during the military government, and since the democracy came back to the country following governments have not achieve a decrease in the average gap in national standardized tests scores.

1.2.1 Educational System

Since 2003, the Chilean educational system includes 12 years of compulsory education. Primary education is from ages six to 13, and secondary education is from ages 14 to 18, and it is divided by:

1. Scientific – Humanities: geared to prepare the student for University level, and at the age of 16 (17) they can choose a subject for specialization in either sciences or humanities for more advanced lessons.

2. Technical – Professional: designed to allow students to quickly enter the workforce after secondary education. Students learn practical knowledge in technical areas.

In 2000, 99% of students at school age was enrolled in primary education, and 90% at secondary education (UNESCO, 2012). Both public and private alternatives exist for all educational levels. There are four administrative categories for schools:

1. Municipal: administered by the country's 341 municipal governments and they are totally financed through a per-pupil voucher system based on student attendance.

2. Private-subsidized: financed through the same voucher system as municipal schools.

3. Corporation schools: vocational high schools funded by the state and managed by business corporation.

4. Private: fully funded by parents.

Private schools (subsidized or not) may be organized as either for or non-profit. In order to receive public funding, private-subsidize schools must reserve 15% their enrollment rate per classroom to students classified as vulnerable[4]. Additionally, schools receive extra funding for each vulnerable student they enroll.

In 1993 it was approved the co-financing for private-subsidize schools. The co-financing allowed the schools to charge a fee no higher that 4 Educational Subsidy Unit (or Unidad de Subvención Educacional) to the parents[5]. Since those days, the private-subsidize schools can charge parents extra fees, and therefore segregating students from low income families in the public system, because they do not have the resources to be enrolled in private-subsidized schools that charge additional fees. The access started to be determined also by income. The fees added to the private-subsidize schools led to a decrease in the enrollment in public schools. The decrease in enrollment in public schools reflected the idea that middle class families associated the fees with better quality. Therefore, middle class families who had the resources to access private-subsidize schools decided to enroll their children in them, looking for a better quality of education. Since the implementation of private-subsidize schools the enrollment in public schools decreased from 78.% to 36.5% as shown in Table 1.1, while the enrollment in private- subsidized schools has increased

[4]Based on family income and mother's level of education.

[5]In 2016, the Unit had a value of 23,980 Chilean Pesos. Nowadays, approximately 36 USD).

from 15.0% to 54.6%.

Year	Public (%)	Private-subsidize (%)	Private (%)
1981	78.0	15.0	7.0
2001	53.1	36.6	8.8
2015	36.5	54.6	7.6

Table 1.1: *Percentage of Students Enrolled in Schools divided by Type. Source: Chilean Ministry of Education.*

One of the functions of the Chilean educational system has been to provide education for all, and to equalize quality across schools. Until the last reform in 2016, it was not clear that the policies were looking for more than measuring quality (Donoso Díaz, 2005). However, during the past few years the government effort in equalizing started to transform the system. In March 1st, of 2016 started the implementation of Law of School Inclusion (Ley de Inclusión Escolar). Its main objective is to improve quality of education within the Chilean school system, and to equalize the conditions for all schools that receive state vouchers (public or private-subsidize schools) can deliver quality education. Three objectives are mainly addressed:

1. Gradually transform subsidized education into free, so that all families can choose a school with freedom, without depending on their economic capacity.

2. Eliminate profit in the establishments that receive funding from the state, that is, all the resources that enter the establishment must be invested in improving education.

3. End with the arbitrary selection of the students, which will help the parents to choose the school with the educational project that they like the most.

In November 2017, Law 21.040 was passed, ending the municipal administration of

educational establishments and creating a new National System of Public Education (Sistema Nacional de Educación Pública). Essentially, the new system creates a network of 70 Local Public Education Services (Servicios Locales de Educación Pública), which assume the administration of public educational establishments. In addition, the Public Education Directorate (Dirección de Educación Pública) was created to manage the new system nationally. The transition process has until 2025 to be implemented. One of the main objectives of this reform is to establish quality and equity in the educational system.

Despite the government efforts in equalizing the quality of education for students across socioeconomic groups, there is a gap in standardized test scores, which reflect the social inequalities in the country. Over the years public expenditure in the sector has not been enough for providing more opportunities for low-income students to access better schools (Cavieres, 2011), and this is reflected in the increasing of students' achievement gap among the three school types (Cornejo Chávez, 2006). Public expenditures in education are no enough to decrease the gap between public and private education, the expenditure in the public sector is still a fraction of what the private sector invest in education, reflected in students' academic achievement.

What is SIMCE?

The national standardized test was developed in 1988 with the target to institutionalize measurement tests. It is an external evaluation tool created to provide information to principals, teachers, and families. Its main objective is to help in improving quality and equity in the educational system by providing information about students' learning

achievements in the different curricular areas. Additionally, it also collects information about teachers, students, and families throughout questionnaires. This information is used to contextualize and analyze students' scores in the tests.

SIMCE scores do not have minimum or maximum; the average and standard deviation are fixed in the first evaluation of each series. Therefore, each year and in each test there are minimum and maximum that vary. Table 1.2 shows the scores than can be used as reference[6] for mathematics and verbal tests taken in 2015.

Test Subject	Insufficient	Basic	Adequate
Language	$x < 250$	$250 \leq x < 295$	$x \geq 295$
Mathematics	$x < 252$	$252 \leq x < 319$	$x \geq 319$

Table 1.2: *Cut-off scores for the 2015 classification according to the Learning Standards for second-grade high school students. Source: Agencia de la Calidad de la Educación.*

Table 1.3 shows SIMCE scores from the last 10 years in verbal. The achievement gap has decrease 31 points since 2008, however, it is because high-income students have decreased their scores since 2012 rather than low-income students increasing their scores. Low-income students have been able to maintain their scores fairly constant, and because of it the gap has been decreasing.

Looking at mathematics scores in Table 1.4 the results are completely different. Low-income students have been able to increase their scores systematically and high-income students have maintaining constant scores throughout the years, decreasing the gap between them and high-income students Looking at the general pattern, average mathematics scores are higher than language.

[6]Scores over 400 or under 100 are very rare for both tests.

Year	Low	Middle-Low	Middle	Middle-High	High
2008	225	239	265	288	307
2010	228	246	274	295	311
2012	230	248	278	292	304
2013	225	239	268	284	297
2014	223	240	264	278	290
2015	224	237	258	270	281
2016	223	236	259	271	282
2017	228	242	263	273	284
2018	228	243	259	269	279

Table 1.3: *SIMCE verbal scores for second-grade high school students divided by socioeconomic status for the last 10 years. Source: Agencia de la Calidad de la Educación.*

Year	Low	Middle-Low	Middle	Middle-High	High
2008	210	229	261	296	325
2010	215	238	273	305	329
2012	225	249	288	313	336
2013	222	244	285	313	338
2014	217	243	281	308	334
2015	219	244	280	305	329
2016	222	248	283	309	332
2017	224	249	283	307	329
2018	228	250	281	303	330

Table 1.4: *SIMCE Mathematics scores for second-grade high school students divided by socioeconomic status for the last 10 years. Source: Agencia de la Calidad de la Educación.*

1.3 Questions

When students come from low-income families they start the schooling process with academic disadvantages. As they enter kindergarten, disadvantages come from their family backgrounds (Lee and Burkam, 2002) rather than personal skills, or from their own teachers. It should not be a surprise to think that the school system is the one equalizing learning opportunities, however, disadvantages are reproduced within the system. Background characteristics can not be changed inside the educational system, either by a

teacher nor the school, no matter how much effort the institutions put into it. Students coming from low-income families should be able to access the same quality of education that students coming from high-income families, i.e. even when the system can not change students' individual characteristics, it should assure that socioeconomic status will not define students' academic achievement.

Previous research identified the most significant variables affecting students' achievement; parental involvement (Fan and Chen, 2001, Galindo and Sonnenschein, 2015, Jeynes, 2005, 2007, 2015, Porumbu and Necşoi, 2013), parent expectations (Chingos et al., 2015, Flores, 2007), socioeconomic status (Barr, 2015, Cavieres, 2011, Flores, 2007, Jehangir et al., 2015, López Guerra and Flores Chávez, 2006, Pokropek et al., 2015), level of vulnerability of the school (Casassus, 2011), school geographic location (Chingos et al., 2015, Otero et al., 2017, Owens, 2018, Pastrana, 2007), and teacher effectiveness (Rockoff, 2004, Torres, 2018, Wright et al., 1997). Most of those variables are background characteristics that can not be change within the school system. However, the system should provide quality education to all students regardless of their background.

Even when there is a significant portion of the literature identifying what affect students' achievement, there is still no literature in what teachers identify as factors affecting students' academic achievement, and if SIMCE database reflect what teachers' identify. I argue that teachers' perspectives would give an insight of what variables inside of the classroom and schools are affecting rather that demographic characteristics. Those could help to increase the role of schools in students' academic achievement.

It is important to understand how the different variables identified by the teachers

impact students' academic achievements; how much of the variance is related to school characteristics, and how much is related to the family background. Being able to identify and understand the significance of the variables identified by the teachers will be an initial approach to provide information about the practices that can be implemented to improve students' learning process within the school environment.

The question that I want to answer in my dissertation is: How the variables identified by teachers affecting student achievement are related to the privatization and decentralization of the educational system in Chile since the change in the Constitution respect to education in 1980? To answer my research question, I will answer the following questions:

1. What are the variables that teachers identify as affecting students' test scores?
2. What variables are statistically significant influencing students' test scores?
3. Do the variables identified by the teachers correspond with the introduction of market-oriented policies in Chile?
4. How do the variables identified by teachers explain students' academic achievement gap?

1.4 Overview of Chapters

The dissertation is organized as follows. Chapter 2 is a description of the Chilean educational system, starting in the eighteen century, and analyzing how social inequalities started during in the initial years. Chapter 3 presents the Constitution of 1980, and the

consequences for educational sector.

Chapter 4 provides an in-depth discussion of the research topic and background. This chapter includes a description of market-oriented policies affecting the Chilean educational system, and how those affect social reproduction, ending in perpetuating inequality. Chapter 5 outlines the choice of mixed methods design, and a description of both qualitative (teachers' interviews) and qualitative methods (multilevel model) utilized.

In chapter 6 are presented the analysis of teacher interviews, and in chapter 7 is presented the results from the analysis of SIMCE database and the triangulation process. Finally, chapter 8 concludes the dissertation by summarizing the findings from the triangulation process. This chapter also talks about the limitations of this research while envisioning future implications and paths to follow.

CHAPTER 2

Education before 1980

Over the past few years, there have been studies published claiming that students' academic achievement measured using standardized tests are not associated to the school type they attend (public, private-subsidized[1], or private). Instead, family socioeconomic status (SES) is one the most relevant predictors for academic achievement, when using standardized test scores (Mayol Miranda et al., 2011, Pastrana, 2007). It may seem natural to analyze the results for different standardized tests by school type; students from private schools have higher scores than students from private-subsidized schools, and at the same time students from private-subsidized scores have higher scores than students from public schools (OECD, 2004). However, when the correlation between family SES and school type is high, the results can be confusing.

High-income students tend to have higher scores in standardized tests compared to low-income students. Therefore, when the correlation between family SES and school type is high, it could be possible to assume that the results are related with type of school rather than family SES. However, when SES is controlled, the results change significantly. When looking at SIMCE scores for medium-high SES[2] public schools had better scores

[1]Private-subsidized schools are administrate privately, but receive a voucher from the state.

[2]The five levels of SES in Chile are: Low, Medium-Low, Medium, Medium-High, and High.

for second grade high school students than private-subsidized and private, for both test mathematics and verbal, as shows Table 2.1. The issue is not the type of school where the students are being educated, it seems to be deeper than that.

	Mathematics	Verbal
Public	336	321
Private-subsidized	301	292
Private	285	282

Table 2.1: *SIMCE scores for high-school second grade students divided by school type, controlling for SES (Mayol Miranda et al., 2011)*

In this chapter I will present the initial years of te educational system in Chile, and how the unequal access determined quality of education, and years of schooling. I start describing how was education in the rural side of the country compared with the urban side, and then talk about government efforts to equalize access and increase literacy rates. I end this chapter talking about the social policies who ended abruptly with the Coup d' état in 1973.

2.1 Urban vs. Rural Education

The initial years of education in Chile date back to 1598, marked by the limited development of formal education in the country. The few schools that existed in those years were either in charge of Cabildos or the Catholic Church. This marked the very initial years of education in the country, and how the Church will be present in the educational system in the next years, through educating and indoctrinate students in Catholics schools. However, the Church did not participated in the educational decision making process, as educational system was independent from it.

In 1747, it was founded the Royal University of San Felipe (or Real Universidad de San Felipe) in Santiago, the first University in Chile. After the declaration of independence from Spain in 1817 started the transition to University of Chile (Universidad de Chile), answering the social changes in the country. University of Chile was finally founded in 1842, with the first Normal School of Preceptors (or Escuela Normal de Preceptores), in order to start the preparation of primary teachers in the country. Since those years, efforts to expand primary education involved increasing the number of schools, to enhance enrollment and attendance rates (Ponce de Leon, 2010). The census of 1907 revealed that one of the main problems was the lack of students inside the classrooms. It had been an increase in number of schools and enrollment rates, but some of the schools were empty; and nonattendance started to be the main focus in the political sphere. Additionally, low rates of literacy were also an issue during the initials years, Table 2.2 presents literacy rates over total population in the country. It was not until 1920 that obligatoriness was approved as a law in Chile.

Year	Literacy (%)	Total population
1875	477,321 (23.0%)	2,075,971
1885	731,543 (28.9%)	2,527,320
1895	867,021 (32.0%)	2,712,145
1907	1,298,218 (40.0%)	3,249,270

Table 2.2: *Percentage of literacy over the total population. Source: Memorias del Ministerio de Justicia, Culto e Instrucción Pública (1840-1907).*

The first Constitution in the country was implemented in 1833 and it lasted until 1925, it was the first time in where the government assumed responsibility of public education. In its article 153 stated that public instruction was a preferred state concern, and in its article 154 stated that private and public instruction was under the direction and su-

pervision of the public authority (Zemelman and Jara, 2006). In those years the division between upper and lower classes was determined by the access to secondary education. In the beginning of Chile as a Nation State, education was divided by social class, and it was not because there was a privileged class over the others as Ignacio Domeyko said in 1843 (Zemelman and Jara, 2006). One class lived from their manual work and the other one was intended to be part of the Government; secondary education should be only for upper class, meanwhile lower class should only be educated at primary level. Even if the purpose of the division was not to divide social classes in the country, the level of education received by each one the the social classes was different. The purpose of receiving higher levels of education was marked by participation in the political sphere, which was one of the main educational characteristics of the nineteen century.

The process of schooling was socially unequal (Ponce de Leon, 2010). The main issue was that schools were not located in where the majority of the population lived. The network of schools was not homogeneously distributed in the country; urban population had better access to education over the immensity of rural population that was characterized by settlement pattern. Table 2.3 shows the difference between the number of schools founded in urban and rural areas in Chile since 1840 to 1900, reflecting the difference in percentage between urban vs. rural education. Initially, schools were installed in the cities, and after that in the countryside, creating an unequal access to education, which marked differences in the educational level that population received in the cities vs the rural areas. The division between social classes was given by access to formal education; rural and urban population did not have the same access to school, leaving the rural

population segregated from the formal educational system.

Years	Urban Areas (%)	Rural Areas (%)	Total (%)
1840-1859	80.8	19.1	100.0
1860-1880	79.0	21.0	100.0
1881-1900	69.6	30.4	100.0

Table 2.3: *Percentage of schools founded in Chile divided by rural and urban areas (Ponce de Leon, 2010).*

School attendance in rural areas of the country was low for various reasons. One of the most important was the wide distances that students had to travel in the countryside, principally by walking (Rengifo, 2012), some families did not have access to horses for transportation, making it difficult to travel. The few schools founded were not close to where the population lived. However, this was not the only reason of low enrollment, poverty of rural households made impossible for some families to send their children to school. Many of them did not have the basic needs, for example some families did not have shoes for their children to go to the school, and additionally some children did not have access to food during schools days, which was not the case if children were working rather than studying. Agricultural work was the path to follow, children were part of the labor that allow the family to live, and what they needed to learn was not learned in the schools. Additionally, the nature of agricultural work affected the school year, students attended only when they did not have agricultural work, thus school year was shorter. As a consequence schools in rural areas did not have the required amount of students to stay open, and they started to move close to the cities, increasing even more unequal access to education for rural population.

It was in 1860 when it was approved the Organic Law (or Ley Orgánica) in where gra-

tuity was one of the main focus. However, it was not Constitutionally mandatory to send child to school, leaving the decision to parents or guardians. In urban areas for every 2,000 inhabitants a school was founded, however in the countryside schools were temporal because the population was not enough for the requirement. Nevertheless, schools were still moving toward the more urbanized parts of the country, as population in rural areas was not enough to fill the schools. Rural families were discontent, they wanted their children to be educated, regardless of enrollment rates, or how many months schools were open (Ponce de Leon, 2010). The unhappiness of families was because the state was not fulfilling its educational role. Children were leaved outside of the educational sphere without the possibility of participating and neglecting the equal access to being educated as they could be in the cities. The rural population was segregated from formal education, creating a educational gap between the different social classes. State strategies were not enough, and the process of schooling was socially unequal.

The problem of geographic inequality was not the only one, another issue was the social segregation within the system itself, and how it was designed. Ideologically, popular education should integrate new population into the political sphere, but without undermining the established social order. This distinguished schools from the main cities had a different curriculum, than schools in rural areas. The demand for education was more structured and resources were higher than in the countryside (Ponce de Leon, 2010). As a consequence, urban schools were more stable, having better economic resources and infrastructure, and the first generation of preceptors and normalists teachers (or Profesores Normalistas), beside the best qualified of them. Schools did not expand at the same rate

as the population in the country, geographical distribution of the population was different from where the schools were being located. The process of schooling was not determined by the number of open schools in those years, it was mainly determined by the access to it (Ponce de Leon, 2010, Serrano et al., 2012a).

The issue at the beginning was marked by differences in access to education, in this case to primary school. Rural population of the country saw themselves harmed, the closing and moving of the schools to more urbanized places leaved isolated the most needed population of the country. In addition, students who attended rural schools did not do it consistently, they had months during the academic year in where they were busy working, which was socially accepted (Ponce de Leon, 2010). As mention before, child labor was another reason for low attendance, if the family decided to send their children to school, this generated an disequilibrium in the family economic resources, specially in the poorest households, where contribution of the children was very important for the daily living.

Low school attendance was not only a issue in the rural areas of the country, it was also present among the poor areas of mayor cities. One of the cities in where it was possible to saw the problem was Santiago and its surroundings. The census of 1910 showed that children who did not attend primary school were mainly in the poorest neighborhoods of the city, and one theory that support those findings is that parents did not understand the benefits of education for their children (Rengifo, 2012). Table 2.4 shows the number of population who were in school age and the percentage of them enrolled. However, the numbers do not represent the what was happening inside the classrooms, many stu-

dents were enrolled in primary education, but nonattendance was a mayor issue as it was mentioned before.

Year	Population in school age	Enrollment (%)
1875	405,202	89,510 (22.1%)
1885	606,154	97,136 (16.0%)
1895	657,049	139,991 (21.3%)
1907	693,929	201,176 (29.0%)

Table 2.4: *Population in school age (5-15) and enrollment in schools. Source: Memorias del Ministerio de Justicia, Culto e Instrucción Pública (1840-1907).*

The educational system was trying to reach rural sectors in Chile, however the difficulties in accessing school in those areas reflected the low priority given by the Chilean State to the poorest sector of the society. In addition to low school attendance, it could be observed that in those years the needs of higher social groups took priority over the rest of the society, leaving the lower class with limited attention by the state. In general, the needs of the poorest sectors were ignored, specially in education, for example schools in the rural sector were closing for low students' enrollment rates. The economy that was driving the country in those years made practically impossible to educate rural population, the social structure that existed left completely segregated the class that depended on agrarian work. In theory, the state wanted to educate rural population, but in practice the complexity of the agrarian feudal system made the fully implementation of a inclusive school system an utopia. Educational decisions were made by the elite to privileged themselves.

The problems mentioned before did not affected the elite living in the cities. Students coming from elite families were educated at the National Institute (or Instituto Nacional). It was created under the government of José Miguel Carrera in 1813 with the purpose of

preparing priests, statesmen, and virtuous and useful citizens from all classes (Yeager, 1991). It functioned as a secondary school, a seminary, and a university at the same time until 1834, after that the seminar was closed and it functioned as a university until 1879. The Institute and the High Schools were the places in where the male elite population was educated.

Primary education in the country was developed for everyone, the main objective of it was to impart basic skills and rudimentary moral lessons, as most students were not expected to advance to secondary education (Yeager, 1991). Table 2.4 shows how budged was unequally distributed between primary and secondary education, reflecting that efforts for educating the most needed population in the country were not as equal as the ones made to educate the elite. In 1845, the percentage of educational budged designated to the National Institute was the same as the one for the total of primary education.

Year	National Institute (%)	High Schools (%)	Secondary (%)	Primary (%)
1845	11.0	2.0	13.0	11.0
1855	9.0	8.0	17.0	22.0
1865	15.0	11.0	26.0	42.0
1875	8.0	15.0	23.0	40.0
1885	11.0	12.0	23.0	32.0

Table 2.5: *Portion of education budget allocated to secondary and primary education. Source: Ley de presupuestos para los gastos generales de la administración pública (Santiago, 1845-84).*

Best teachers taught at the National Institute. Policies for teachers there changed over the years, first moving from teaching between six and seven subjects, to teach a specific of only two, leaving the teachers focused in what they know best. It was expected that teachers would have a specific knowledge to be able to teach students. In addition, teach-

ers were expected to have scientific knowledge, in order to be able to answer the doubts of their students. The recruitment process also showed how strict was to become a teacher in the Institute, applicants had to pass a written and oral examinations to be hired; the first one related with their content knowledge, and the second one with their ability to teach. At the end of 19th century when the teachers who worked at the Institute were majority alumni, the High Schools[3] also had Institute alumni as teachers. Although, it is not known what were the socioeconomic class of the teachers that worked at the Institute, it is not hard to assume that the majority were part of the elite.

The alumni of the Institute had important positions within the government, and in the decisions that were made regarding educational budged in the country. This is why the resources designated to the Institute were difficult to reallocate. The Institute was fulfilling its main objetive, which was to train the civilian elite of the country (Yeager, 1991). One of the main reasons for that, it was because the Institute charged fees to the families; to consider the Institute as an educational option for the children, it was important to come from a wealthy family. Moreover, the institution admitted only young man who had completed primary education in private schools, with tutors, or in one of the annexed of the National High Schools.

It was in 1875 when secondary education in the country suffer a breakdown. The President Federico Errázuriz allowed the establishment of new private secondary schools, which offered an alternative to the Institute. Thus, the conservative families of the country

[3]High Schools were the Liceos that were created in the 1850s in an effort to separate academic and general education tracks. Its origins for the firs half of the 19th century was the French model, and the second half was the German (Serrano et al., 2012b).

changed their children to those private High Schools, searching for a more conservative education. Finally, it was in 1880 when the Institute declared itself as liberal institution. Nowadays, the National Institute is still open, and is one of the best public schools for males in the country.

In summary, between 1880 and 1930 Latin America lived in a Oligarchical State[4], where the main purpose was to maintain the already established social structure, and to keep the power of the government among the wealthiest families. During those years the main objective was the creation and implementation of a public and free educational system administrated by the state, and the establishment of the foundations of nation and citizenship (Torres and Puiggrós, 1995). However, it was on those years when Chilean society started a socioeconomic division, leaving the poor outside of political participation, and neglecting the idea of being a citizen. Those years were not so different of what happen years after when the region entered into what could be defined as the Neoliberal State, in where the elite was able to find the best education in private institutions, leaving lower class families in the public sphere of education. The educational model in the nineteen century was characterize by:

1. The exclusion of lower class families for being part of the political community, i.e. being a citizen.

2. The establishment of primary schools; municipal, state or religious for the poor and for their literacy and discipline; at the same time the institutes and secondary

[4]In Chile I will establish that the end of the Oligarchical State started with the Law for Compulsory Primary Education (or Ley de Instrucción Primaria) in 1920.

schools for the elite. Setting two solitary confinement circles in the society.

3. The main focus of primary education was to teach basic skills to the population, mainly people who lived in rural areas of the country. Science and humanity education was for the elite, which was educated at the secondary level.

4. The Catholic Church was increasing participation in the sector, seeking for influence in public education, however public education maintained the laic character.

2.2 Law for Compulsory Primary Education of 1920

The transition from Oligarchical State from Welfare State in Chile can be associated with the promulgation of the Law for Compulsory Primary Education (or Ley de Instrucción Primaria). However, prior to implementing it the situation was alarming, rates of illiteracy in the country were one of the biggest problems. The first census of the twentieth century in 1907 showed that levels of literacy in the country was not as expected. For the first time, the results were published according to the age range of the population, which allowed to know how efficient, or not, were the measures implemented in previous years. The efforts for bringing the school closer to the more needed population were not enough, and low rates of attendance and literacy were only a consequence of it. Approximately 448,659 children between six and fourteen years did not know how to read, representing 62.7% of the population in that school age range. Additionally, enrollment rates were low; only 31.9% of the school age population was enrolled in primary education, however, only 63% of that population was actually attending regularly to the school,

only 17% of the total population in school age was receiving formal education. One of the issues was that the population in the country was growing at a faster rate than the schooling process, which left most vulnerable sectors with little or no access schools (Serrano et al., 2012a).

The law not only mentioned the compulsory of primary education, it also addressed issues of primary education management, primary schools, primary education staff and normal education. However, compulsory primary education for children insured by the state had the greatest impact in the society, which can be categorized as the first attempt of the state to make sure that all population would complete primary education. Additionally, the law complemented gratuity that had already been guaranteed since 1860 in the country (Zemelman and Jara, 2006). Among the specifications of the law, it was established that compulsory education would extend between seven and 13 years old children, it would last for at least four years, and it would be implemented in fiscal[5], municipal or private schools.

In the city, where the number of schools was not an issue the implementation of the law was not as hard as in the rural areas of the country. In the rural areas access was already limited, and the execution of the law was different. Obligatoriness would be fulfilled by sending children to temporary schools for four seasons (Article 2). However, the law also established that the obligation was consider fulfilled if the child received instruction at home, verified by an annual test at the end of the school year (Article 4). In addition, if there were not free schools nearby, there were not vacancies in schools located

[5]Fiscal schools were administered by the state.

in less than 3km radius from home, there were no free transportation, or if it was a physical or moral impediment for the student for attending to school, children were excused (Article 6). The number of educational institutions increased since the implementation of the Law, as shows in Table 2.6; in primary education number of schools increase by 505 in 20 years, for secondary education the number of schools increased by 32, and tertiary education by eight. However, rural population was segregated from the formal educational system again, access to those new schools was not easy for some students.

Year	Primary Education	Secondary Education	Tertiary Education
1910	3,207	248	16
1915	3,365	326	19
1920	3,643	292	19
1925	3,877	313	25
1930	3,712	280	28

Table 2.6: *Number of Schools per educational level. Source: Memorias del Ministerio de Justicia, Culto e Instrucción Pública (1909-1930).*

Coverage in terms of schools was adjusted to demographic profile of the country, and public sector was in charge of providing coverage to sectors that were beginning to develop in those years, increasing primary education in both rural, and urban sectors. At the same time, private education focused on development of secondary schools, it did not take into account geographical spread of the country, and only expanded their services in two sectors (Santiago-Valparaiso-Aconcagua and Cautín-Valdivia-Osorno). One of the reasons for this separation was that public education was intended to lower social classes, while the private institutions were for the elite.

In order to ensure that mandatory education was being accomplished in rural areas, it was not allowed to hire in factories or workshops children under 16 years old that had

not complete school obligations (Article 7). It was also required that employers should ensure that minors in charge of their employees receive primary education, and those who had minors in their domestic service should enroll them in schools and facilitate their attendance. Penalties for non-compliance with the law ranged from a verbal reprimand, an economic fine, or time in prison between 1 and 10 days, or twice as long in case of recidivism (Article 11). In the rural sector, where the population still lived dispersed, the law forced landowning owners to create schools using their own resources. The same happened with the mining camps and workshops that gathered a certain number of people. If privates owners did not comply with the law, they were exposed to economic fines (Article 38). In case that land owners could not fully finance the schools, the state had the responsibility to provide the resources needed for it, through a voucher system (Article 43). This was also the case for municipalities that did not have the resources to maintain schools (Article 42). School attendance increased throughout the years, and Table 2.7 shows the number of students enrolled in each level of education started to increase since 1910. However, it was in 1920 when the number of students in primary education significantly increase until 1930.

Year	Primary Education	Secondary Education	Tertiary Education
1910	316,805	44,686	1,824
1915	376,439	65,963	3,646
1920	401,251	72,423	4,502
1925	500,522	85,159	6,246
1930	530,211	87,887	6,549

Table 2.7: *Number of students per educational level. Source: Memorias del Ministerio de Justicia, Culto e Instrucción Pública (1909-1930).*

Rural population began to have more access to primary education since the implemen-

tation of the law. Schools gradually settled in small towns and villages, increasing access and thus school attendance. Rural society became urbanized (Serrano et al., 2012a), and with it, rural world had more access to resources. Thus, rural schools began to consolidate thanks to the intervention of the state, and the municipalization of it.

Primary education was in charge of the Ministry of Public Instruction (or Ministerio de Instrucción Pública) (Article 18), which was composed of two members appointed by the Senate, two members appointed by the Chamber of Deputies, one member appointed by the President, and the General Director of Primary Education (Article 19). Within its functions was to evaluate where new schools would be built in the country, which ones would close, and which one would be moved to a more needed area. It was also in charge of the national curriculum, books that would be used, and teaching materials. Additionally, the Ministry should ensure compliance with the law (Article 18).

Education was divided in three grades of general education; there were two years of schools each one of them, and a fourth grade of vocational education, that could vary from one to three years (Article 29). The law also classified schools according to the level of education: elementary, superior, and vocational. Elementary (or second class) schools consisted of two levels of education, the superior (or first class) had three or more grades of education, and the remaining schools were the third class. The fourth grade of education could functions as a separate vocational school, or incorporated as an adjunct to a high school. It was in the fourth grade where agriculture, mining, industrial knowledge, trading, and other practical skills were taught (Article 29).

For adults who had not been able to complete their primary education, it was estab-

lished that it would be provided through supplementary and complementary schools. Those schools could be night or evening, depending on the demands of target population. In supplementary schools it was taught the two grades of primary education; and in the complementary schools, improvement of the skills, besides continuation of general education (Article 30).

The Law for Compulsory Primary Education helped to bring closer schools to most needed population in the country. Table 2.8 shows school enrollment, attendance and literacy rates. Looking at the data presented in Table 2.8 it can be observed that the Law implemented in 1920 helped to increase enrollment rates in children at school age, and school attendance, which was a problem in the early years in rural areas of the country. It also helped in increasing literacy rates of the population. All of the efforts started to show in the growth of educational level.

Year	Enrollment in School Age (%)	School Attendance (%)	Literacy (%)
1920	34.6	64.0	59.3
1930	42.5	71.0	75.3

Table 2.8: *National coverture in 1920 and 1930, the implementation of the Law. Source: Seis Episodios de la Educación Chilena, 1920-1965.*

The Law for Compulsory Primary Education was one of the most important changes in education at the beginning of the century. In addition to increasing enrollment rates in school age population, it also increased coverage, reaching all of the social strata, and the rural side of the country. However, it created a new issue in educational system. In the 1920 the population in school age increased, thus the number of students without access to education also growth, as a consequence educational system collapsed and schools were leaved with severe structural problems. In the following years, public education,

training of skilled workers, and supervision of private education were established as a state responsibility. However, what distinguished the beginning of the century was an increase in coverage.

Despite the efforts made by the state promulgating the Law, it could be observed that the problem of social inequality was still present. Education received by the poorest population of the country was not comparable to the education that was receiving the elite in the cities. This accentuated even more the problems of social inequality that had been dragging since the last century. Social inequality was determined by the geographical sector in which the families lived. Rural sector being more vulnerable to live in poverty and having lower quality of education, or not having education at all. Meanwhile the population living in larger cities and with a slightly better economic situation could opt for a better lifestyle, and provide their children with education that was only accessible by the elite in the cities.

2.3 After the Law for Compulsory Primary Education

It was in 1931 when it was possible to assess the impact of the Law. The percentage of children between six and 14 years enrolled in a school was 42.5% of the total population in school age. The Law for Compulsory Primary Education of 1920 had succeeded in improving the problem of school absenteeism, but the country's territorial division did not helped to bring closer the rural sector to the school. Schools' infrastructure was not enough for what was needed to complement the requirement of sending children to school. In addition to that, poverty levels of families who were not sending their chil-

dren to school was also a concern (Serrano et al., 2012a). Child labor was one of the main reasons of why the poorest families in the country did not send their children to school, needing their labor in order to survive, and when they were at school they were not producing resources for the family members.

With the change in the government in 1938, Pedro Aguirre Cerda assumed the presidency. One of the main focuses of the new government was to improve education to strengthen economic development in the country. It started with the idea of changing what was exported, going from raw materials, to products that needed more development. This sought to improve the economy, and stop depending on the foreign economy. The new educational program was focused on the idea that the state should take over public education, the training of skilled workers and the supervision of private education.

The task was not easy, with the migration of rural population to the cities, urban population grew, accelerating the demand for education in the cities. However, schools failed to meet the growing needs of the new population, creating a problem of coverage. A issue that in previous years had been only rural, it was beginning to move to the cities, along with the migrant population. Data shows that coverage was not enough for the rural migrants, in 1940 the educational system only served 42.2% of the children between the ages of five to 19, leaving more than half of school age population without access to it, segregating them from the educational system. Also, creating a problem in the labor force, since this population that was not being educated, it was being integrated into the labor force without knowing how to read or write.

The Educational Reform of 1945 attempted to implement the Gradual Renewal Plan for Secondary Education (or Plan de Renovación Gradual de la Enseñanza Secundaria), however it was a failure. The plan sought to implement a new pedagogical model, based in the philosophy of John Dewey (Zemelman and Jara, 2006) in secondary schools, which transformed them into experimental ones. It was during that same year that Chile joins the bloc of countries led by the United States, after the end of World War II. Chile signed an educational agreement with the University of Berkeley and the University of Columbia to train Chilean teachers. However, the agreement did not last for too long. In 1948, as a way to pressure the government to end the Popular Front in the country, universities did not renew the agreement, leaving the few Experimental Secondary Schools without new resources and segregated from the traditional school system.

The Reform of 1945 was a failure, and public education on the country suffered from an imbalance in its financing. Politically, the opposition pressured the government to subsidize private education, as a consequence public schools ended with limited resources, impacting school infrastructure, and vacancies. Adding the growing urban population, the lack resources and setting aside public education, the differences between high and low-income students started to be stronger than before. The state distributed unequally the available resources between public and private sector, privileging private education, which was mainly accessed by the elite, leaving the most needed population with less resources.

Between 1939 and 1952 the government decided to focus in adult education, with the migration of rural population to the cities it also migrated the problem of illiteracy. As

shows Table 2.9 urban literacy rates were higher than for rural population, as a consequence of the lack of access to education in the rural side of the country, as mentioned before. Thus, illiteracy rates of the people migrating towards the city was higher compared to people who could access primary education in the urban areas. That is why the government focused on adult education, both primary and secondary, establishing night schools for both levels. However, the growth of urban population was greater than the system could absorb, and the institutions were not able to offer what the population was needing, leading again to the deterioration of schools' infrastructure.

Area	Literacy (%)	Total Population
Urban	2,844,197 (90.8%)	3,130,778
Rural	876,127 (33.6%)	1,319,584

Table 2.9: *Literacy rates for population of 15 years and over: 1960 census. Source: Dirección de Estadísticas y Censos, Resumen Nacional del Censo 1960,76 (Austin, 2003).*

Private education benefited from the erosion of public education. On one hand, the number of private institutions increased significantly during those years, and on the other hand development of public institutions was stagnant, the number of public institutions remained the same. Private schools had subsidies from the state, which added to the fees charged to parents, the budged was significantly higher than the one in public schools.

2.4 Educational Reform of 1965

Before the Educational Reform of 1965, in Chile it was possible to observe a level of inequality that had not improved throughout the years, even with the efforts of the state in previous reforms, social inequalities did not decrease. The constant seeking for integrat-

ing the rural population into the educational system, was not an easy task, and in 1960, 33.0% of the rural population was still illiterate (Zemelman and Jara, 2006), doubling the national average. But the issue did not ended there, although enrollment rates had increased since the beginning of the 20th century, there was still a significant part of the population in school age that was not enrolled, or if it was, it did not finish its education. Some of them not even completing four years of mandatory primary education, in where reading and writing were taught.

In those years, society was marked by inequality, and its low social mobility. Social inequalities already existent at school level were transferred into the labor world (Zemelman and Jara, 2006), setting new social hierarchies. The elite, generally the social sector with more years of schooling, it was also privileged in the labor force. It did not have a real competition to keep its social status, the fact that there were coming from a higher social sector it gave them an advantage at the moment of entering into the labor world.

One of the first measures of the Reform was to provide primary education to all children outside the school system. In March of 1965, new classrooms were set up in the schools, new teachers were trained in an accelerated manner, as well as providing textbooks and school supplies for this new population entering into the system. This was a short-term response to the needs that were not being addressed the years before. The changes began to have an effect on education in the country in both, quantitative and qualitative. The part of the society that was being segregated from the school system began to be a part of it, they began to receive a better quality of education.

The changes in the system were not only to increase coverage or investment. In 1967,

the government increase the number years of mandatory schooling, going from six years of primary education to eight years, which had to be completed between the ages of six and 15 years old. Meanwhile, secondary education was decrease from six to four years, and it could be scientific-humanist or professional-technician, and the ages to complete it was between 15 and 19 years old. At primary level the state was looking for uniformity in education; to train students as citizens for their future participation in a democratic society, to prepare them for the labor world or to continue their studies at the secondary level, as well as to promote globalized learning, and to allow them to explore their vocational preferences in the last years before entering secondary education. At secondary and tertiary level the main objective was diversification, offering students different institutions; preparing students in necessary technical skills for economic development if they decided to go to technical-professional education, or provide more specific knowledge if they opted for the scientific-humanistic training. In tertiary education there were only two public educational institutions, it was in those years were they expanded their campuses across the whole country, answering the new social structures providing access to higher education not only in the urban areas.

Education in the second half of the 20th century can be described from the following processes: increase in coverage, diversification of the types of institutions and educational programs, modernization of the curriculum and changes in educational policies. The increase in coverage was still the main focus in 1950s: building new institutions, creating accelerated teacher training programs, and using schools in double turns. All of those reforms helped to decrease illiteracy rates in the country.

2.5 The Government of Salvador Allende: 1970 - 1973

One of the main goals in education of the Government of Salvador Allende was the implementation of Unified National School (or Escuela Nacional Unificada, ENU). It was build to fight the educational structural crisis. There was a contradiction between achieving a better quality of life for the workers and an educational system which neglected access to education or discriminating by the quality that they receive. All of this helped to perpetuate social structures through the educational system.

Some of the most important ideas were from Popular Unit (or Unidad Popular, UP); its consisted in a National System of Permanent Education (or Sistema Nacional de Educación Permanente) which would include education of all individuals and at all levels, where communities committed and organized educated its members. In other words, it created an educational system capable of ensuring workers access to quality education in order to improve their living conditions.

To achieve the goals proposed at ENU, it was necessary to develop both, a regular education and extra-schooling systems. The first included kindergarten, elementary, and high school levels; the purpose was general, polytechnic and professional training. The second prioritized illiterates, dropouts from schools, and people who were not in the school system; workers, people with extraordinary or special needs and local communities.

The program postulated the democratization through designing of a decalogue, for a school that aspired to be national, unified, diversified, democratic, pluralist, productive; integrated into the scientific, technological, humanistic and planned community. The

ENU project aimed to generate a well-rounded education, at the service of people, created and produced from and with the people themselves. Permanent education that will involve students in all stages of life, thus understanding that education did not end in the classroom, but it should be integrated into the media and spaces where individuals belong.

The ENU project was presented on February, 1973, however it was never implemented. The most conservative population, those who could access to an elite education in Chile, reacted negatively to the project and called for mobilizations. The elite ended with the idea of implementing an educational system to transform social inequalities being perpetuated by education. The fall of ENU and the future implementation of market-oriented policies into the educational system ended with the efforts that had been made since 1920 to deliver quality education to the entire population were put to an end (Cavieres, 2006, Pitton, 2007).

In summary, the periods of from 1920 to 1973 represents the implementation of a limited form of the Welfare State in Chile, whose origins have been associated with the industrial and financial changes in the post depression in the U.S., the policies were defined as government protection of minimum standards of education. However, the unequal distribution of income, economic vulnerability, and the lack of unemployment insurance and welfare benefits caused the non full implementation of the Welfare State in Latin American countries (Torres and Puiggrós, 1995). In Chile the situation was not different, the Welfare State was not fully implemented.

Since the beginning of Chilean history, education had been divided by socioeconomic

status. In the early years separated by rural vs. urban education, which leaded to a mass migration from the rural areas to the cities; rural population was looking for better opportunities. The lower class in the country was living in the countryside, in where access to education was restricted by distance, and poverty, leaving the children isolated from the system. Meanwhile, upper class population living in urban areas had access to schools, which were also better in quality. The gap was not only marked by geographical location, it was also defined by socioeconomic status. Within the cities, families did not send their children to schools because of their own poverty. The opportunities for both social classes were different; marking the beginning of education as a social privilege, and not as a right.

CHAPTER 3

The break Point: *Coup d' état* and the Constitution of 1980

The fell of Salvador Allende's government ended the social policies that sought equity and quality within education system in the country. The military coup transformed the state from providing education to the whole country to a subsidiary-state, which was responsible for providing resources to schools. Public education lost in quantity and quality, therefore students enrolled in public schools, particularly those from the most disadvantages social groups (Cavieres, 2006) were affected by changes in educational policies.

When General Pinochet took the government, the debt crisis started to affect the economic development. Market-oriented policies from the World Bank started to guide the pathway to follow for Chile, and investment in education was not the most important sector for the World Bank (Heyneman, 2003) during those years. One of the reasons to privatize education was to leave the state worried about the economic crisis. Thus, market-oriented policies guided the economic growth, and the educational sector.

The changes introduced by the military government helped to recover the economy, and since 1980s the economic development could be defined as prosperous (Edwards, 2013). However big changes in education were introduced following market-oriented policies. Those policies pushed toward an increased presence of market dynamics in

social life while disengaging the state from its historical responsibility for social welfare (Klees, 1999). Education shifted from being responsibility of the state to be in charge of the private sector. Therefore, the new free market economy drove changes in educational sector, new private schools were open (Elacqua and Fabrega, 2004), taking advantage of the subsidized system implemented in the country.

3.1 Constitution of 1980

During the military dictatorship it was establish a new constitution, which it has not been changed since the country came back to democracy. Its main educational aim was *"the full development of the person at different stages of his life."* However this responsibility falls on the parents or guardians of the children, because *"they have the preferential right and the duty to educate and choose the educational establishment for their children."* It is not longer the state who guarantee education as a right, however *"elementary and secondary education are compulsory, thus a free system must be financed for such purposes, and to ensure its access to the national community."*

The constitution also promotes freedom of education, meaning having the right to open, organize, and maintain educational establishments: *"a freedom that has no other limitations than those imposed by the morals, good manners, and national security."* However, *"officially recognized education can not be oriented to propagate any political tendency."* It also establish the minimum requirements and application norms, for elementary and secondary education and *"the state must ensure this compliance."* The idea of having public education at elementary and secondary level, and institutions for training teachers developed

during the twenty century is left behind, establishing an educational system based on market-oriented policies.

The new constitution marked the foundations to transform the role of the state in terms of education. It opened policies that had as a priority to protect and regulate the functioning of the national education system. It is important to emphasize that this new system holds parents and guardians responsible for educate the new generations, rather than state. With all of the policies implemented, family background started to influence even more in the quality of education that their children can receive, either by differences of cultural, social, or economic capital. Education becomes a service and as a consequence parents and guardians are the consumers who can "choose" what service they want for their own children.

When education is viewed as a service, it also add marked competition, meaning that schools have to compete to attract their consumers, in this case, families and students. Thus, it is not surprising that the purchasing power of families determines the quality of education that their children will receive. Cultural capital, purchasing power (economic capital), parents' educational level (Aschaffenburg and Maas, 1997), and resources to access, stay, and graduate from an educational institution become the best predictors of success or failure within the school. The model based in competition transform education into a reproduction system of social classes (Harker, 1984).

To maintain this view about education for the next years, in March 10, 1990, one day before the country came back to democracy, Pinochet approved the Constitutional Organic Law of Education (Ley Organica Constitucional de Enseñanza, LOCE) which rat-

ified the concept of teaching freedom. When democracy was finally recovered in Chile, the LOCE was neither modified nor replaced.

3.1.1 Ley Orgánica Constitucional de Enseñanza

The Constitution of 1980 is an inheritance of the military dictatorship that is still in force. There have been some changes in education, and during the last years work has been doe to eliminate private-subsidized schools. However, more than 30 years have passed since the return to democracy, and academic achievement from vulnerable students continue to show results the political implementation aimed at favoring the country's elite.

It was in March 7 of 1990 when the military government approved the LOCE, and it was published three days after that. The main objective was to establish the minimum requirements for elementary and secondary education; regulate the state role to ensure and regulate the process of official recognition of educational establishments of all levels.

This new regulation was build by gathering different decrees issued during the 80s. It was designed to reflect the efforts of the government to transform education system, favoring the entry of private entities, changing the role of the state from teaching to subsidiary. It also constitutionally ensure teaching freedom, i.e, freedom to own a educational establishment.

The introduction policies such as: free choice of school, distribution of public resources subsidizing the student rather than the school and not differentiating between public and private-subsidized schools, decentralization of education system, and authorization to select students in private-subsidized school, despite being funded by the state, lead to

what is called the commodification of education in Chile. Having a private educational system is not exclusive to Chile, however it is one of the few country in where private-subsidized schools can be profitable and funded by the state.

This Law established four main ideas:

1. The state role changes from teaching to subsidiary. As discussed in chapter 2, the constitution of 1925 established education as a responsibility of the state, however the implementation of LOCE the state became a subsidiary state, transferring the responsibility of teaching to the families. Education is a social right rather than individual, and that is why should be responsibility must fall on the state and not on families (Santa Cruz Grau, 2006).

2. Requirements to open and own a school are low: have completed high school education, follow the national curriculum, have enough personnel, have the place and didactic materials.

3. School can select their students, the only requirement is that the selection process should be public and transparent.

4. It was created the national standardized test SIMCE. The objective was to measure quality of education and provide information to parents about the education market. Thus, parents could decide the best school according to SIMCE scores.

Along with ending education as a social policy (Pitton, 2007), the changes implemented during the military dictatorship contributed to the decline in public education quality (Cavieres, 2006). Decentralization, professional and union weakening of the teach-

ers affected this decreasing of quality in public education, generating even more social inequalities. When the military dictatorship finished in 1990 and the country came back to democracy, the following governments did not do any relevant to change the situation in the country.

3.2 Back to Democracy

The principal function of the Chilean educational system was to expand the accumulation of capital (Silva, 1993). But when the military dictatorship ended the following governments did not change the policies implemented during those years. The government of Patricio Aylwyn assumed LOCE as the new law, postponing any change in educational structure in those years (Bellei and Vanni, 2015, Moreno-Doña and Jiménez, 2014). Four basic ideas of education were implemented during those years (Assaél Budnik et al., 2011, Cornejo Chávez and Redondo Rojo, 2007):

1. The Constitution of 1980: It is the current Constitution, with some superficial changes. One of the most important adjustments included was that it removed the requirement that education was primarily a function of the state. Instead, it created the concept of teaching freedom, which basically consisted of protecting through constitutional warranty the right of any person to open and hold a school, and the freedom of the parents to choose schools in which they wanted their children to attend.

2. Municipalities and private holders: The schools no longer depended directly on the

Ministry of Education. Starting in 1981, it was the responsibility of each municipality to administer the schools within their respective geographic limits (Taylor, 2003). Private holders were able to open schools and to receive the same subsidy as that of a public school.

3. Subsidiary State: Private holders would receive a subsidy from the state for every student enrolled in their schools; however they would not have to be held accountable for incomes as the public schools would. The intention behind this was to make schools compete among one another for enrollment. Supposedly this would lead to an improvement in the quality of education.

4. Privatization of the Higher Education system: The State dramatically reduced the funding of the public universities and allowed, at the same time, the creation of private universities. The most important Chilean university, the University of Chile, which at the moment has nationwide presence, was only allowed to keep their headquarters in Santiago. The rest of their campuses around the nation were converted into minimally-funded local universities. Even the School of Education, which was part of the University of Chile, was torn down and converted into a different university altogether.

The idea of new market-oriented ideology was implemented inside the educational system. However, those policies in Chile started before the military government, the Chicago Boys, a group of Chilean economist trained at the University of Chicago under Milton Friedman ideologies. They not only suggested privatization of education, they also spearheaded the following changes in Chile: privatized the healthy industry, intro-

duced the international agricultural trade, proposed labor laws that mandated raises tied to inflation, and disbanded collective bargains units (Taylor, 2003).

Since the incorporation of private-subsidized schools into the system, it is possible to distinguish three different types of schools: private (private holder, no state subsidy), private-subsidized (private holder, receives state subsidy) and public (holder is the corresponding municipality, receives state subsidy). Additionally, some schools decided to incorporate extra resources per student over the state subsidy. On the one hand, in the case of a private-subsidized school, this money comes from the parents. On the other hand, in the case of a public school, some municipalities actually have enough resources to complement the subsidy.

Type of administration	Expenditure per student (monthly)	Student selection by income	Student selection by grades
Private	120,000	Yes	Yes
Private-Subsidized with additional resources	32,000 (subsidy) + Family payment	Yes	Yes, generally
Private-Subsidized with no additional resources	32,000 (subsidy)	No	Yes, generally
Public with additional resources	32,000 (subsidy) + Municipality collaboration	No	There is more demand than offer
Public with no additional resources	32,000 (subsidy)	No	No

Table 3.1: *School divided by type administration in Chile. Source: Reyes, L. (2007). La Cuestión Docente en América Latina. Estudio de caso: Chile.*

Table 3.1 shows the different type of schools administration in Chile: private, private-subsidized and public. As it was described before, since 1993 some private-subsidized schools could opt to charge additional fees to parents, adding resources available to each private-subsidized school. Additionally, public schools could also add extra resources with the collaboration of municipalities, which also develop a difference in quality when students are divided by geographical location.

Under the government of Ricardo Lagos in 2003, education went back to be a state responsibility, mandatory for every person until they are 18 years old was instituted, but is not constitutionally warranted yet, only compulsory. The state started to have responsibilities again, but the fact that education is only obligatory and not constitutional warranted is still a problem in the society.

3.2.1 Ley General de Educación

In 2006, during the Penguin Revolution, as a result of this social movement, LOCE was replaced by the Education General Law (or Ley General de Educación, LGE). It established the principles of education system, which included universality and continuing education, quality, equity, participation, responsibility, system articulation, transparency and flexibility (Bentancur, 2008). In other words, the main feature of the LOCE, which was the right of teaching freedom over the right of education, did not change.

It was established state responsibilities as the assurance of free education, and ensuring its quality and equity: *"elementary and secondary education are compulsory, and the state must finance a free system to ensure access to them for the entire population."* Following this

idea, the conditions for establishments to receive official recognition become more stringent; including the commitment to meet the national standards for educational performance and results: *"it is the duty of the state to ensure quality education and that it is provided to all, both in public and private sectors."* It is interesting to notice that it was not until 2007 that schools need to meet national standards. For more than 15 years, the role of the state has been ensuring that schools fulfill the minimum requirements, the state delegate education responsibility to families rather than fulfilling its role to ensure education as a social right.

As shown in Table 3.1 students can be selected by school. However, LGE established the prohibition of all forms of student selection by private-subsidized schools, up to the last grade of elementary school. In reality, private-subsidized school charging extra fees to families can still select their students by family SES. On the other hand, it reaffirms the right of parents to choose school for their children.

The project did not affect the core of educational system established during the 80s. There was no mention about the mixed relationship of the system (private–public), it did not ensure equal treatment of public and private providers, there was not autonomy of management of schools, the nature (state or independent) of the agency that will be responsible for the evaluation of quality was not accurate; nor was the basis of public financing (Brunner and Uribe, 2007).

Article 3. Chilean educational system is build on the basis of the rights guaranteed in the constitution, as well as in the international agreements ratified by Chile and that are in force and, especially, the right to education and freedom of education. It is also

inspired by the following principles:

1. *Universality and continuing education. Education must be available to all people throughout life.*
2. *Quality of education. Education should aim to ensure that all students, regardless of their conditions and circumstances, achieve the general objectives an learning standards defined in the manner established by law.*
3. *Equity of education system. The system will tend to ensure that all students have the same opportunities to receive a quality education, with special attention on those people or groups that require special support.*

In Chile, laws and regulations have been imposed from abroad since colonial times (Cabrera, 2007). First, coming from Spanish Empire during the colonial era, until nowadays. The constitution in Chile was implemented during the military dictatorship, thus democracy was non-existent, and the policies implemented during those years are the one that still regulate the educational system. Even when the government had tried to implement reforms, those have not modify the core of education system: privatization and the gap in students' academic achievement are still an issue in the country (Valenzuela et al., 2008a).

Changing the LOCE to LGE was a great accomplishment, however the Penguin Revolution did not support the changes made to the Law. Students did not feel represented by the final document, because it only perpetuate the market-oriented policies implemented before. The main purpose and the core ideas of LOCE are still reflected in LGE; reducing extreme social inequalities and improving life quality among the most marginalized

population in the country is crucial to fight poverty and decrease social reproduction.

3.2.2 Ley de Inclusión Escolar

The consequences of market-oriented policies, and the constant changes in the policies without changing the core of education system had not been enough for breaking the market-oriented structure implemented during the 80s (Valenzuela et al., 2008a). As mention before, five main consequences are still present (Treviño, 2018);

1. There is a dislocation of the school system given the competence across schools.
2. Students selection and co-payment in private-subsidized schools increased school socioeconomic segregation.
3. Different working conditions for teachers in public vs. private-subsidized schools.
4. Decreasing in enrollment rates in public schools.
5. Schools' holders allow to profit with resources from state vouchers.

All of those policies were implemented during the military dictatorship in the country, and even with the implementation of LGE the main structure of educational system was still based in market-oriented policies. However, it was in 2015 when the Law of School Inclusion was implemented, which involved the transformation of the school system in Chile. It had three main objectives:

1. Ending profits in the system: financial resources are destined exclusively for educational purposes.

2. No more copay from the families: as the resources given by the state increase, the payments that families make will decrease.

3. School admission regulation: the Ministry of Education and University of Chile make available through a web platform, a unique and centralized admission system.

The law seeks to improve efficiency in the relocation of public resources invested in education by eliminating private-subsidized schools. It also looks for equity by decreasing segregation and increasing resources for schools with high enrollment of low-SES students. However, the reforms face technical, financial and political challenges (Bellei and Vanni, 2015). The state must invest in education, however it has not been able to provide enough resources to public school for improving quality, the looking for ending with private-subsidized schools seem almost impossible.

CHAPTER 4

From Social Reproduction Theory to Market-Oriented Policies

In Latin America, almost all of the countries were governed by a dictatorship at some time of the history, for example Argentina from 1976 – 1983, Brazil from 1964 – 1985, Uruguay from 1973 – 1985, and Chile from 1973 – 1990. However, during those years Chile experienced a change in the Constitution, implementing new market economic policies. Friedrich Hayek and Milton Friedman's original market-oriented policies[1] were first implemented in Chile (Baer and Maloney, 1997, Pastrana, 2007), marking a tendency for the rest of the region (Inzunza et al., 2011, Stanziola, 2002, Torres and Puiggrós, 1995). Following the cuts in incomes and social services, the economic policies implemented caused the decline of social indicators for lower classes. The budget for education dropped in 20% on average, reflecting the low interest in maintaining social rights.

As Pitton says in her article from 2007:

> "The Chilean neoliberal turn constitutes a clear example of the tension between neoliberal theory and practice. Theoretically based on political ideas

[1] Both economics worked together in spreading libertarian ideas.

of human dignity and individual freedom, though, the actual pragmatics of Chilean neoliberalism were framed in a very repressive context. Consequently, Chile seems to be remarkable case for analyzing to what extent neoliberal policies can be based on principles of individual freedom."

Since the implementation of market-oriented policies, Chile is one of the countries member of Organization for Economic Co-operation and Development (OECD) with the highest levels of inequality in the world (Cavieres, 2011). One indicator to measure the level of inequality in the income distribution is the Gini Index. [2] According to this indicator, within the Latin American countries members of OECD, Chile has a Gini Index of 0.454 (OECD, 2015), only surpass by Mexico (0.459). In Chile, income of the 10% of the population with the highest income is 26 times higher than that of the poorest 10%.

Social inequalities in Chile are also reflected in education, results from international standardized tests, like PISA, Chile is one of the countries with higher scores within Latin America. However, it is still far from the average of OECD member countries. When students are divided by school type the results from private schools are comparable to the average of OECD countries; in 2012 mean mathematics scores for private schools was 518, while the OECD average was 494, however public schools mean score was 391 and private-subsidized was 430. Chile is an emerging country, economically well positioned in the region, and despite all the efforts continues to present problems related to access to quality education.

[2]Gini index measure the income distribution of a country's residents. The number can range between 0 and 1, helping to define the gap between rich and poor, with 0 meaning perfect equality and 1 representing perfect inequality.

Quality of education varies tremendously depending on the schools type or socioeconomic status (SES). One of the characteristic of the Chilean educational system is its economic segregation (Valenzuela et al., 2013, Villalobos and Valenzuela, 2012). On one hand, schools with a private administration enroll mostly students from high SES, while public schools enroll students coming from low and medium-low SES. On the other hand, students coming from medium and medium-high SES are mostly in private-subsidize schools. In 4.1 it is possible to observe the percentage of students enrolled in each type of school divided by student SES.

SES	Public (%)	Private-subsidize (%)	Private (%)
Low	14.3	5.4	> 0.5
Medium-Low	18.4	16.3	> 0.5
Medium	5.4	18.9	> 0.5
Medium-High	1.2	11.5	> 0.5
High	> 0.5	0.5	7.6
Total	39.3	52.7	8.0

Table 4.1: *Percentage distribution of second-grade high school students according to socioeconomic status (SES) and type, 2013. Source: Agencia de Calidad de Educación.*

Table 4.1 shows how as SES increase the percentage of the population enrolled in privates schools also increase. When the SES of students is low the majority of the students are concentrated in public schools, and when the SES is medium, students are concentrated in private-subsidized schools, representing 46.7% of the total population. This is defined as educational segregation (Santos and Elacqua, 2016, Valenzuela et al., 2013), and it is observe mainly at school level.

Social and cultural inequalities are reflected in educational inequality within the school system. Students have different family backgrounds and characteristics, which determine

a large percentage of students' academic achievement. Education simple reflect and reproduce social inequalities (Dubet, 2006). Following those ideas, it should not be a surprise that private schools enroll mostly high-SES students, education is reproducing the already established social structures in the country.

4.1 Social Reproduction Theory

The early development of how societies reproduce their own structures emerged between 1960s and 1970s in the United States, Britain, and France. The most basic argument was that schools were not institutions promoting equality of opportunities, instead they reinforced the inequalities of social structure and cultural order found in a given country (Collins, 2009). Those ideas were developed in France by Pierre Bourdieu giving the foundations for social reproduction theory that is used in this research.

Pierre Bourdieu develop a theory of social reproduction that focused on both, the activities and structures that maintain social inequality as the role of agency as a counterbalance to structure (Aschaffenburg and Maas, 1997). Social inequalities are most effectively perpetuated within educational system, since initial differences in cultural capital become systematically encoded in educational level (Aschaffenburg and Maas, 1997, Bourdieu and Passeron, 1990), and those patters are evident only over longer periods of time (Collins, 2009). There is research that argue that social reproduction is a process that is continually negotiated and re-elaborated by actors (Lareau and Horvat, 1999). But what happens when the actors involved in the educational process are acting as agents of reproduction?

Agents of reproduction are usually within schools or schools as institution. The issue in here is that social inequalities are often reproduced inside the school. Low-income students learn less than the national curriculum in many schools, even after several years, they lack of basic literacy and numeracy skills (World Bank, 2018a). Thus, when thinking about schools as agents of social reproduction, it is possible to assume that depending on resources, which are often correlated with school type, learning experiences are completely different depending on students background characteristics, perpetuating inequality of opportunity. The level of social inequalities can not be equalized during tertiary education, it is impossible to fully account for the level of inequality they were exposed during their schooling years and background characteristics (Bourdieu and Passeron, 1990). Therefore, equalizing quality of education at school level to increase social mobility by generating access to tertiary education to help low-income students is fundamental.

One of the roles of education is to produce knowledge and information: transfer, acquisition, and creation. When the role of educational system is not fulfilled by creating equal opportunities for all students, the schooling process becomes a highlighter of social inequalities. Thus, if the purpose of education is to facilitate the process involved in developing and maintaining capabilities so as to generate well-being (Desjardins, 2009), the role of schooling should be providing equal opportunities regardless of background characteristics.

National assessments provide information on the overall education system achievements, but they are also a tool for highlighting inequalities (Bank, 2018), between different countries or within the same educational system. Social inequalities are perpetuated

within the educational system, and those are reproduced implying a high correlation between parents' cultural capital and children's cultural capital (Aschaffenburg and Maas, 1997). Education, which often through social reproduction leads to an intergenerational transmission of inequalities and poverty (Aschaffenburg and Maas, 1997, Harker, 1984), has the strongest potential to reduce inequalities, by giving equal access to quality education regardless of students' background characteristics. On one hand, unequal access to quality education denies the possibility to low-income students access to tertiary education (Ferreyra et al., 2017), which lower their chances of getting out of poverty. On the other hand, education can help societies by supporting individuals acquiring skills, and increasing human and cultural capital to improve expected earnings in the future.

It is important to recognize which factors influence students' academic achievement to better understand how those factors are perpetuating social inequalities within a certain country. Educational systems need to be able to act as a equalizer and providing equal opportunities for all, specially low-income students, rather than reproducing inequalities, and the already establish social structures in the countries.

4.1.1 Dimensions of Cultural Capital

Cultural capital can be defined as the convergence of human, economic, and social capital. However over the past years there have been multiple definitions. For example Bourdieu defined as educational qualifications (Bourdieu, 1987), Tzanakis refers to transmissible parental cultural codes and practices capable of securing a return to their holders, in this case, students (Tzanakis, 2011), and other authors defined as proficiency in and familiarity

and knowledge with dominant cultural codes and practices in the society (Aschaffenburg and Maas, 1997, Dumais, 2002, Sullivan, 2001).

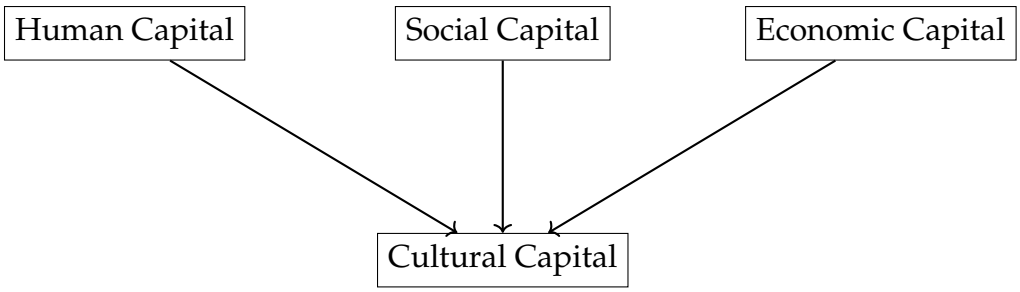

Figure 4.1: *Path diagram of convergence of cultural capital.*

When talking about cultural codes, they are usually defined by the dominant social class to maintain or improve their positions within the social class structure (Joppke, 1986), meaning that being proficient will highly depend on the social class, which normally will benefits upper-class families. Thus, being culturally proficient will lead to generations maintaining their social status, therefore reproducing the already defined social structures and inequalities (Aschaffenburg and Maas, 1997).

Institutionalized form of cultural capital within educational context occurs, when students come from families with high cultural capital, they enter into the system with great advantages compared to those who begin their academic career without it (Aschaffenburg and Maas, 1997). In other words, the way that the educational system is build, academic and social inequalities are usually reproduced rather than being changed. Schools are agents that help with maintaining the social class structure by providing students coming from high-SES an accumulation of cultural capital at a faster rate than students coming from low-SES (Aschaffenburg and Maas, 1997), and gain higher educational credentials

than lower-class students (Sullivan, 2001). On one hand, Sullivan found a positive correlation between parental cultural capital and students' cultural activities, which helps to support the idea that resources are transmitted from parents to children (Sullivan, 2001). On the other hand Dumais postulates that participation in cultural activities is not an adequate measure of cultural capital in modern society (Dumais, 2002), which is at least contradictory. However, it seems possible to say that involvement in cultural activities could lead to an increase in cultural capital, which can also increase academic success (Arastaman and Özdemir, 2019).

How could cultural capital be related to academic success? A possible explanation can be that participation in cultural activities, such as reading or going to museums, leads to development of knowledge or skills, that are not learn at the school, but can increase academic success. The impact of cultural capital in academic achievement increases with parental educational level at least for females, when talking about males the positive impact is restricted to students from low and middles SES (DiMaggio, 1982).

It can be argued that cultural capital is also related with economic output (Reay, 2004, Throsby, 1999), implying that higher cultural capital could increase economic success, which could be measured as income. It is possible to estimate economic, human or social capital; however cultural capital can not be directly measured (Joppke, 1986). There have been attempts to measure it, for example *Scale of Cultural Capital* developed by Balboni, Menardo and Cubelli (Balboni et al., 2019). In their experiment they develop 20 items to measure the three dimensions of cultural capital: participating, which refers to active participation of different types of groups. The second factor is consuming, defined by

cultural activities in free time. The third factor is expert using, refers to all cultural activities requiring expertise and formal education. Some examples of questions used are "Books read for pleasure", "Books owned", and " Books read for study or work." It can be imply that cultural capital can be partially measured by reading habits. Other studies had also operationalize cultural capital as hours spend reading (Gaddis, 2013), and found that time spent involved academically (Castro et al., 2015, DePlanty et al., 2007, Fan, 2001, Galindo and Sonnenschein, 2015, González-Pienda and Núñez, 2005, Gordon and Cui, 2012, Hill et al., 2018, Jeynes, 2005, Khajehpour and Ghazvini, 2011), for example reading have a significant effect in academic achievement (Boonk et al., 2018, Cooper, 2010). Cultural capital can also be measured using parental reading habits, assuming that reading habits are inheritable by students.

Human Capital

Human capital is the value of skills, knowledge or experience, which are usually acquired throughout educational system. More generally can be defined as intrinsic productive capabilities of human beings (Eide and Showalter, 2010, Lanzi, 2007). The World Bank developed the Human Capital Index (HCI), which measures the human capital of the next generation, defined as the amount of human capital that a child born today can expect to achieve in view of the risks of poor health and poor education currently prevailing in the country where that child lives (World Bank, 2018b). One of the components measured is the expected years of learning-adjusted school, which reflect the amount of learning

despite the amount of years being at the school[3]. In other words, the HCI assumes that not all educational systems, or schools are equally effective, and that learning outcomes can vary even when the amount of years are keep constant.

It is important to highlight that investing in education is not the same as investing in quality of education. Over the past years, rates of literacy have increased around the globe[4], in Latin America and the Caribbean in 2018 the percentage of literacy was 93.87%, however the quality of education in the region is reflected in the poor results in PISA[5], for example.

Investing in human capital is key for improving life choices and general well-being throughout education (Schultz, 1961). An individual, or the governments invest in education with an expectation that the investment will provide benefits in form of higher earnings (Eide and Showalter, 2010), increasing skills for economic production and providing opportunities for enriching lives (Lanzi, 2007). However, the choice of investing in education is not true for low-income families, who depend almost exclusively on public schools, limiting the access to quality education.

From an economic point of view, investing in human capital is a way to put public investment in education, this sending children to schools is key for improving their well-being and general life choices. However, schooling process needs to be supplemented by

[3]A HCI of 0.7 means that a child born will grow up, and the productivity in the workforce will be 70% of what it could be if they have been compared to complete education and good health, giving information about enrollment and quality of education.

[4]According to the World Bank in 2000 the literacy rate was 80.78%, and in 2018 was 86.30%. *Source: The World Bank Data.*

[5]Latin American countries who participated in PISA in 2015 had lower scores than the OECD average. *Source: National Center for Education Statistics.*

an understanding the role of schools in the development of human subjects not as labor force of capital, but also as cultural agents capable of changing social structures (Ryan and Giroux, 1984) and improving low-income families' life.

Social Capital

Social capital is understood as social relationships from which an individual is able to receive institutional support, including delivery of knowledge-based resources (Stanton-Salazar and Dornbusch, 1995), for example guidance or advice for tertiary education admission, or networking for job searching. From this point of view, social relations are resources, and individuals can invest in them expecting benefits (Lin, 1999).

Bourdieu's theory of social reproduction focuses on how socioeconomic status and cultural capital influence educational achievements (Rogošić and Baranović, 2016). Cultural socialization, which it is a form of social capital, has a positive effect on educational attainment (Pishghadam and Zabihi, 2011, Schlee et al., 2009), reproducing part of parental educational status into their children (Niehof, 1997). On the other hand, there is not much evidence on how social capital can influence academic achievement, however there is research focused on how social capital in the student's network is positively related to the SES of student's family (Stanton-Salazar and Dornbusch, 1995), which could potentially lead to an increase in academic achievement.

In Chile it is important to highlight that educational level and social capital are significant predictors of school choice (Gayo Cal et al., 2019). Higher family social capital tends to be related to having greater access to apply to schools with requirements as-

sociated to SES. For example, social capital is positively correlated with the demand to purchase school shares as a requirement for enrollment in some of the most exclusive private schools in Chile. It can be hypothesize that at higher SES, the social network is richer in knowledge, meaning higher social capital. Thus, school choice is well informed, and it is actually a true choice.

Creation of social capital is not only associated with the family, it is also related with school context. Within school context, it refers to relationship between students and school actors that can improve academic achievements. While family social capital start its development during the early years, school social capital starts only when students access to formal education, and both of them positively affect academic achievement (Dufur et al., 2013). One way to increase social capital within schools is to decrease the number of students per classroom. However, even if the school can act as an equalizer for social capital, the chances are that enrollment in private schools is lower than in public[6], reproducing the already existing inequities.

Economic Capital

Using Bourdieu's theory of capital, commodities and materials are objects of economic capital, for example tangible resources available at home. Those resources can be books, or thinking contemporary computers and access to internet. In other words, economic capital is defined as the control that students have over economic resources, usually inherited from their parents. It is defined and operationalized as possession of consumer

[6]In Chile public school enrollment is usually 45 students per classroom, while private schools enroll around 25 students per classroom.

goods in the household, parental educational level, and occupational status, which are normally transformed into income (Caro et al., 2014).

Families having economic advantages can provide children with better materials and educational resources, for example number of books available at home. Additionally, some authors had found that differences in students' achievement are influenced by family socioeconomic status (Baoyan and Minggang, 2015, Blanden, 2004) having greater access to educational resources (Blanden, 2004, Cheng and Kaplowitz, 2016, Collins, 2009, Fan, 2014). The influence of background characteristics, such as SES on access to educational resources is found in every stage of educational process, it starts during early years (Lee and Burkam, 2002), and continue its development throughout access to higher education. It is possible to say that typically, students from high-SES backgrounds achieve higher scores in standardized tests than students from low-SES.

Parental expectations are highly associated with SES (Bodovski, 2010). A study developed in Germany, where the educational system is largely state-funded, and families do not have to pay fees associated with education, found that even when parents do not pay to access education quality, economic capital provides advantages to high-SES families by allowing their children access to transnational education, helping them acquiring cultural capital (Gerhards and Hans, 2013). Additionally, parents with high economic capital can access resources outside of the school system itself (Lynch and Moran, 2006), exacerbating inequalities.

Schools also have different resources depending on the administration type: private, private-subsidized, and public. Thus, schools can add economic capital into the produc-

tion of educational outcomes. Variances in school economic capital are positively associated with variance in students' academic achievement (Jones and W. Zimmer, 2001). In other words, when schools have higher assets the investment in educational resources positively impact students' academic achievement.

4.1.2 Habitus and Field

Bourdieu's theory also focused on the concept of habitus. He defines it as:

> "System of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them." Bourdieu (1990)

In his definition, he talks about ingrained habits, skills and dispositions. Habitus is build from the interaction between an individual, the group culture, and the social institutions of the family and school. When the individual act following this dispositions it reinforces individual and group habitus. Habitus is reproduced and evolved throughout time from the interaction between the individual and social structures (Edgerton and Roberts, 2014); people in privilege position act in ways to secure their own family privileges, while those socially disadvantages can only access to a limited set of opportunities for their future, because they know from an early age what they can expect to achieve in education, acting as an agent of social reproduction (Dumais, 2006).

Habitus helps in perpetuating social inequalities in the educational system by embedding the already established social structures into individuals. To achieve higher academic achievement, students use their embedded capital to alter their habitus (Gaddis, 2013). On one hand, students coming from low SES are exposed to difficult learning environments, reproducing the already established social class structure. On the other hand, students from high SES have habitus that matched with the values of the educational system, exacerbating their own advantages within the educational system. How the student interact with the social environment will determine the chances of success, in this case, higher academic achievement (Edgerton et al., 2013). Habitus oscillated between adapting to and being adapted by the environment (von Rosenberg, 2016), however when students' school environment does not change from their home environment, social classes are reproduced throughout the school system.

Dispositions that constitute the habitus are also structured, inevitably reflecting the social conditions in which they were formed (Power, 1999). The habitus of a student who grew up in a socially disadvantage environment will tend to be similar to the habitus of other students who grew up in the same environment; usually those students will be grouped within the same school; in Chile schools are highly segregated by SES (Valenzuela et al., 2008b, 2013). Meanwhile, students from advantage environments will have a different habitus, associated with their own environment and their access to private education.

Habitus can have the potential for transform social inequalities in the context of schooling (Mills, 2008). In certain situations students could be able to recognize the constrain

of social conditions and vision the future that fits them. Meanwhile, other students may identify their own capacity and tend to generate opportunities for action and break the circle of reproduction. However, the first step to transform social inequalities for the students is being able to recognize them and generate their own opportunities to change the social reproduction cycle.

As habitus is adaptable depending on the field; the same habitus may end in different practices, depending on the state of the field (Lingard et al., 2015). Following the same idea, the educational system is the field; a network of relations between positions situated in the structure of the distribution of power and relations to other positions (Heimans, 2012). For Bourdieu, fields denote arenas of production, circulation, and appropriation and exchange of goods, services, knowledge, or status, and the competitive positions held by actors in their struggle to accumulate, exchange, and monopolize different kinds of power resources (capitals). Each field has its on rules that are called *doxas*, and before entering the field, every person should know the rules for being part of it.

In general, individuals tent to group themselves with people who has the same capital and habitus within the field, and as the distribution of resources is not equal, this creates an social space asymmetrical and hierarchical (Cerón-Martínez, 2019). In education, classrooms can be defined as smaller fields nested in schools, which are larger fields; in both of them relations are developed. Usually, social inequalities will be developed at the school level rather than the classroom level; schools tend to group students coming from the same SES or geographic location which will end up reproducing the social class structures already established.

4.2 Social Inequality and Education: The Case of Chile

In Latin America, class structures have become more polarized, both extremes of social classes have been increasing the gap between them (Arnove et al., 2003). Specifically, the Chilean economy is one of the most successful in Latin America. However, this success at first glance hides how income distribution is totally unequal when the population is divided by the income shared. Table 4.2 shows income share held by each quintile in Chile. It shows that the highest 20% of the population have been decreasing their income share, while the lowest 20% is increasing. However, the difference between the first and last quintile is still more than 40% in 2017. When looking at wealthy accumulation, the richest 1% of the population hold 26.5% of the wealth, while 66.5% hold 2.1% of the total wealth[7].

	2000	2003	2006	2009	2011	2013	2015	2017
Highest 20%	58.0	56.8	53.4	53.4	52.6	52.6	51.2	51.3
Fourth 20%	18.7	19.1	19.6	19.3	19.6	19.4	19.8	19.7
Third 20%	11.8	12.2	13.0	13.0	13.2	13.2	13.6	13.6
Second 20%	7.7	7.9	8.9	9.1	9.3	9.3	9.7	9.7
Lowest 20%	3.8	4.0	5.0	5.2	5.3	5.5	5.7	5.8

Table 4.2: *Income distribution divided by quintiles. Source: Poverty and Equity, World Bank. Last Update: 03/18/2020.*

Equity is one of the main values in the constitution of educational policies that are seeing as essential for labor (Matus and Infante, 2011) and social development. However, looking at the values it is possible to say that social inequalities are being inherited from one generation to the next. Education has the role to change intergenerational transmission of social reproduction, and improve social mobility. However, how education

[7]Source: Comisión Económica de América Latina y el Caribe.

promotes social mobility depends on family background; parents' SES and resources, defined as inequality of educational opportunity (Flores, 2007), and of previous knowledge (Morgan et al., 2016). In Chile, inequality is perpetuated throughout education, differences in access had been intensified throughout the years (Arnove et al., 2003), and even when low-income families decide to protect students' enrollment (Torche, 2010) it is not enough when quality is one of the main issues in the country.

In Chile, since the beginning of the educational history the process of schooling was socially unequal (Ponce de Leon, 2010). It started with the differences between urban and rural population, specifically the access to formal education. The population that lived in the urban side of the country had access to schools, meanwhile the rural population was isolated from the school system because the lack of access. In those years, the majority of the population endorsed the concept of education as a way for social promotion (Cavieres, 2011). However this concept was not held by all. Education in the nineteenth century was not considered important for rural families. They often did not send their children to the school, because they believed that the only education needed was the one learned at work, in order to increase family income by supporting their families.

Nowadays, difference in access to education is determined by quality. Chile is one of the countries with the highest private participation in school system, in where educational segregation is observe mainly at school level (Santos and Elacqua, 2016, Valenzuela et al., 2013), for international example look at (Jehangir et al., 2015). Specifically in Chile, different studies show that parental educational level and geographic residence will determine the life trajectory of the population (Espinoza et al., 2013, Torche, 2005). One way

to measure educational segregation is using Duncan Index[8] (Carrasco et al., 2014, Elacqua, 2012, Santos and Elacqua, 2016, Valenzuela et al., 2013). This measures the proportion of people relevant to a group that should be transferred from one unit to another to achieve an equal distribution. For example, what proportion of vulnerable students should be transferred from one school to another to achieve equal distribution.

Studies using Duncan Index have shown that education segregation within the Chilean system is high, pointing out that school segregation in Chile has values close to 0.6 in 2010, and between 0.45 and 0.53 in 2014 (Valenzuela et al., 2013). They analyze the level of segregation using D-Index for the 30% lowest and highest socioeconomic level using data provided by families in SIMCE questionnaires. In 2008, for the 30% lowest income they found a D-Index value of 0.50 for high school students, implying that in order to have a homogeneous distribution of low-income students among schools, it would be necessary to transfer 50% of low-income students from schools with high to low concentration of low-income students. For high-income students, D-Index value was 0.59 for secondary schools, defined as hyper-segregation. Additionally, when looking at schools divided by type, the values are even higher for private schools, in 2006 D-Index values for high-income secondary students was 0.66, meanwhile in public schools was 0.47, revealing the high level of segregation inside the schools in Chile (Valenzuela et al., 2008b, 2013).

Until a few years ago, public policies in Chile did not help to decrease educational segregation. First, educational institutions have freedom to select their own students,

[8]The Duncan Index has values between 0 and 1, where 0 means total integration and 1 total segregation. Values between 0.0–0.3 are considered as low segregation, 0.3–0.6 moderate segregation, and values greater than 0.6 high segregation.

through admission tests (Cornejo Chávez, 2006, Pastrana, 2007) or income (Elacqua, 2012), and because of the added fees, low-income families can not choose their children school. Admission tests and the added fees have helped to perpetuate the homogenic composition of each school, i.e. maintain the already established social structure in the country. Mechanism such as co-payment and selection in private-subsidized schools have contributed to perpetuate social inequalities in the country. Following the same idea, educational segregation and selection processes established by private and private-subsidized schools help in creating school where students are from similar SES (Bonal and Bellei, 2018, Carrasco and San Martín, 2012, Elacqua et al., 2006). Educational segregation is a problem that needs to be addressed in order to build an educational system based on equity (Ryan and Giroux, 1984).

From the above, it is clear that inequality already exists within educational system and schools are acting as agents of reproduction rather than helping social mobility. Educational market oriented policies such as privatization, school choice, and added fees accentuate Chilean school segregation (Eyzaguirre, 2016, Mizala and Torche, 2012, Oliva, 2008, Ortega et al., 2018, Sapelli and Vial, 2002, Valenzuela et al., 2013) and inequality (Gallego, 2006). Also, family background characteristics like socioeconomic status emphasize advantages of high SES students, their families benefit from market oriented policies in education (Collins, 2009, Fischer et al., 2006); they can choose to be enrolled in private schools, and at the same time schools select their students based in abilities, using admission tests, and SES, using added fees (Contreras et al., 2010). One of the main issues with educational model in Chile is that most of private and private-subsidized schools have a

selection process for their students, contradicting the purpose of creating an educational system based in competition, in where families should choose school based in quality.

School segregation affects how schools implement and develop the national curriculum. Public schools enroll mostly disadvantaged students, as shows Table 4.3 (Valenzuela et al., 2008b), and they have to provide education without resources or materials (Becker and Luthar, 2002, Mizala and Romaguera, 1998, Pokropek et al., 2015), in addition to supply for the lack of support from home (Chubb and Moe, 1988). Low-income students come with disadvantages from their family environment, for example they are exposed to greater stress, depression or lack of motivation (Casassus, 2011), and it is the school or the teachers who finally have to fulfill those needs, dedicating less time to the learning process, which has been found to increase academic achievement in low-income students (Huang, 2015). This is finally reflected in the poor performance of public schools on standardized test like SIMCE, which simple reflect the poor educational quality that disadvantages students can access (Battistich et al., 1995).

School Type	Vulnerable (%)	Non-Vulnerable (%)	Total (%)
Public	68.7 (39.8)	34.8 (60.2)	43.3 (100)
Private-Subsidize (Free)	15.0 (32.0)	10.7 (68.8)	11.8 (100)
Private-Subsidize (Added Fees)	16.3 (10.8)	45.0 (89.2)	37.8 (100)
Private	0.0 (0.1)	9.5 (99.9)	7.1 (100)
Total	25.1	74.9	100

Table 4.3: *Percentage of student population in urban zones by vulnerability condition and school type, vulnerable students are defined as the 30% of students from the lowest-SES. Source: MINEDUC*

The main objective for creating SIMCE was measurement and to provide information to parents about quality. Thus, at the beginning was mainly to compare how efficient schools were, and thus provide information to the families (Bravo, 2011). Using the infor-

mation provided, families would enroll their children in the best school. However, in the last years, SIMCE has been transformed by the media into one of the most important tests in the country. It is usual to report which are the top ten schools in the country, providing information to parents and society in general. In 2016[9] one newspaper reported the 20 highest scores for 2015, unsurprisingly 16 of them were from private schools. Those schools are the ones that are highly segregated by SES, and the access to them is determined by income, thus most of the population do not have access to them, even when parents from all SES would like to have a high quality academic school (Gómez et al., 2012, Thieme and Treviño, 2011). In addition to the importance given by the media, schools also look for improving their own scores, which was one of the initial ideas of SIMCE, however, that means leaving non-evaluated topics dismissed by school principals.

The constant search for increasing scores does not seek to improve education quality of a given school (Haladyna et al., 1991), instead focuses on increasing scores in topics evaluated by SIMCE (Abrams et al., 2003). This has led to the dismissal of certain subjects that are not evaluated by SIMCE, and that are considered less important in the academic training of students, such as music or arts. This is a natural consequence of the process that sought to make schools compete in search of a better education for students. Contrary to the initial purpose of SIMCE, this way of thinking is also leaving aside aspects of students' academic development, which can not necessarily be measured in a standardized test, depriving students of much needed well-rounded education, exacerbating the academic gap among students (Cavieres, 2011, Gajardo and Grau, 2019).

[9]https://www.emol.com/noticias/Nacional/2016/06/10/807121/Ranking-Los-20-colegios-que-obtuvieron-los-mejores-resultados-en-el-Simce-de-2-medio.html

The information that parents have at the moment of choosing a schools depends on various factors, one of them is parents' educational level. Families with higher levels of education consider formal sources of information; such as media and the Ministry of Education. However, when the educational level decrease, parents start to consider social networks; such as family, friends, neighbors, among other informal sources (Elacqua and Fabrega, 2004). Parental education can be associated with school choice, at higher parental education, higher will be the probability of choosing a private school (Contreras, 2001). When parents' school choice is determined by educational level, social mobility is a utopia. Unlike students coming from a family with high level of education, students who come from families with less years of education; the parents will make the choice of school based in their own experiences. Thus, the population with lower level of education will continue to receive the same quality that their parents received years ago; decreasing the probability of achieving access to higher education and socioeconomic level from which they come.

Are there really alternatives to choose schools in Chile? In theory, parents should be able to choose the school that best suits their children, either because of a combination of factors that they consider relevant; distance, quality, values, etc. However, in practice the alternatives are few, or in some cases non-existent. Low-income families are at disadvantage, their choice is limited to public schools, preferably close to where they live; due to lack of resources they can not afford pay for education, even when private-subsidized schools receive funding from the state. Choice becomes a privilege for high-income families rather than a consequence of market oriented policies.

4.3 Market-Oriented Policies in Chile

Over the past three decades market-oriented policies had been growing as the dominant ideology in Latin America, affecting education and social policies in Latin America (Cornejo Chávez, 2006, Torres, 2013), contributing to deepening the poverty in the region. The idea behind those policies are promote open markets, free trade, reduce investment in the public sector, decrease state intervention in the economy and deregulation of markets (Baer and Maloney, 1997, Meller, 1993, Torres, 2011, 2013). However, even the public institutions are shaped into the business-like model, based on competitions and accountability to improve the services, setting the directions of educational systems (Cavieres, 2011, Desjardins, 2009).

As a consequence of reduction in public spending, governments decrease investment in education, among other social rights (Pitton, 2007), undermining the state as a caretaker of the public good, privileging and highlighting the role of the market over the state (Torres, 2013), asserting that the free market would lead to a overall well-being (Pitton, 2007). However, market-oriented policies had failed to meet the promise of contributing the well-being of all (Pitton, 2007), increasing the gap between social classes and their access to social rights, including education.

Market-oriented policies were implemented in Chile to fight the debt crisis (Torres and Puiggrós, 1995, Baer and Maloney, 1997) that started during Allendes' government. The debt crisis started to affect the economic development, and the government decided to focus on fighting the crisis. It was in the country, the model was adopted in the mid 1970s to promote market freedom (Rogers, 2013), when the military government was in

the power. The policies drove the government to reduce the State's role in social spending (Arnove et al., 2003, Taylor, 2003), displaced by an emphasis on the consumer's freedom of choice (Taylor, 2003).

The main purpose of those new polices were to shift the state responsibilities to focus in the economic development (Torres, 2002, 2008), fighting poverty in developing and third world countries (Torres, 2002), and bringing the inflation under control (Arnove, 1997). The idea of basic services as social rights did not longer exist, and it was replaced by the emphasis on the consumer's freedom of choice (Taylor, 2003), the families started to be consumers and the schools private providers where the ones giving a service. The policies from the World Bank and the International Monetary Fund started to guide the pathway to follow (Arnove et al., 2003, Bonal, 2004, Pastrana, 2007), and during those years investment in education was not the most important area for the World Bank (Heyneman, 2003).

The educational market-oriented policies implemented with the change of the Chilean Constitution during the 80s (Cornejo Chávez, 2006) shifted the role of the state from provider to subsidiary, thus it started to be responsibility of families to educate their children (Assaél Budnik et al., 2011). The state passed the responsibility of education to families, and they were the ones that began to take control over the financial process. On one hand, families with more resources were able to access private schools, usually associated with better quality of education, since they had the resources to self-financing themselves. On the other hand, low-income families had to opt for a public education, since they did not have the economic capacity or resources to access private-subsidize

schools. This increased the gap already existed in the quality of education received by students from different social classes.

Among other policies implemented it was the decentralization and privatization of the public school system (Arnove et al., 2003, Stanziola, 2002). The educational policies started to define how the organization of social structures were presented (Matus and Infante, 2011). Market-oriented reforms also emphasized educational practices based on competition (Cavieres, 2011), and free market (López Guerra and Flores Chávez, 2006) creating standardized tests to measure the quality of education in each school. Thus, students were divided by academic performance and social class (Cavieres, 2011). The improvement in quality of education it was based in creating competition among schools (Cornejo Chávez, 2006); schools with better tests scores will attract more students having more resources to continue improving their quality. Meanwhile, the schools with lower tests scores will decrease the enrollment rates, as a consequence of the poor performance school should be close (López Guerra and Flores Chávez, 2006). However, that did not happen, and since the implementation of market-oriented policies there are school with low performance that are still open and receiving funding from the municipalities (Hsieh and Urquiola, 2006).

The creation and implementation of private-subsidized schools resulted in a decrease in the resources of the public sector, middle class families decided to move their children from public to the new private-subsidized schools looking for a better education (Hsieh and Urquiola, 2006, López Guerra and Flores Chávez, 2006). The decrease in enrollment in public schools during the 1980s and 1990s affected how resources were distributed.

Public schools were left with less funds, meanwhile private-subsidize schools were favored in the increasing of funding, increasing the quality of education that the students enrolled in them were having. Additionally, decreasing in enrollment from middle class students in public schools, the lower class did not have the power to promote quality in the public system (Arnove et al., 2003), therefore the quality of education in public schools decreased. It was the middle class parents who were the ones advocating for quality in schools (Arnove et al., 2003). Leaving the public sector with less resources and less enrollment, which significantly decrease the number of public schools in the country (Cavieres, 2011).

One of the consequences of reallocating funds was decrease in quality of public schools. Without the access to resources schools lead to not attracting the best teachers into their classrooms, and the material available was not the best, leading to an increase in the gap already existent between low and high-income students. It became evident that the academic gap among students was the results of economic differences that divide schools and students across social classes (Cavieres, 2011).

Some studies have shown a positive correlation between students' socioeconomic status and test scores (Mizala and Torche, 2012). For example Mizala and Torche (2012) found that students' achievement is less determined by the socioeconomic status in the public than in the private-subsidized sector. In other words, if a student is enrolled in a private-subsidized school, socioeconomic status will affect the scores in standardized tests more than if the same student were in a public school. However, that can be related with the socioeconomic status of the school. Some other studies (Sapelli and Vial,

2002) shows that there are important gains in test scores associated with enrollment in private-subsidize schools.

4.3.1 Decentralization

Decentralization can be defined as the process of redistributing functions or power away from a central location. In the case of Chile, de process of decentralization started during the military government, and it was implemented with the purpose of shifting the state responsibility in education to the municipalities. The process was a key aspect of the education reform (Taylor, 2003), and it started with the implementation of market-oriented policies during the military government. Responsibility of financing schools shifted from the state to municipalities, the local governments, with the purpose of decentralize the provision of education (Stanziola, 2002). However, during the military government of Pinochet the local governments were still designated by the state, without public elections, thus decisions regarding public education were still made authoritarians.

The main idea was that municipalities would be more efficient managing the resources and they will be able to increase efficiency (López Guerra and Flores Chávez, 2006, Parry, 1997) by creating competition and improving autonomy of the local governments; which were supposedly be more efficient than the state (Torres, 2013). The decentralization process was seeking to redistribute responsibility and financial decision educational related. It transferred the management of public and private-subsidize schools to the municipalities, looking for quality and effectiveness. Also, decentralization was done trough privatization of the educational system, which is going to be describe below in the next section.

Since the decentralization of educational system in Chile, the municipalities started to be in charge of the financial decision in every district (Contreras, 2001, Elacqua and Fabrega, 2004). Expenditure decisions, for example setting teachers and workers salaries and benefits at school level was not in charge of the state anymore. And even when it was the state to one who funded the schools via students vouchers the administration of those resources was transferred to municipalities. The idea of shifting the responsibility was to increase efficiency, however in Chile municipalization did not remove the existing social and economic segregation within population (van del Wal, 2007). It helped to increase social inequalities within the different neighborhoods.

One of the downsides is that even when it was the state who funded the schools using vouchers, municipalities could add extra resources to it. The Municipal Common Fund (or Fondo Común Municipal) is the main source of financing for Chilean municipalities as defined by the Constitution itself [10]. Or in other words, redistribute revenues from the wealthiest municipalities to the poorest. However, some municipalities still have more resources, making the distribution unequal. For example, municipalities with greater fiscal capacity had higher teacher salaries and significantly higher expenditures per student (Parry, 1997). Those will have better chances to improve quality within their limits.

The municipalization of the educational system helped to perpetuate social segregation instead of increasing social mobility (van del Wal, 2007), as it was mentioned before. Even when the access to schools was "equal" to all of the students, geographic segregation had been shown to be high, specifically in Santiago (Borsdorf et al., 2016). Wealthy

[10] Article 122: mechanism for the redistribution of solidarity among the municipalities of the country.

municipalities had been able to better supplement government per-student voucher from business and other municipal revenues (Pastrana, 2007), additionally since 1993 schools could charge additional fees to the parents to complement the voucher given by the municipalities. As a consequence of geographic segregation, low-income families live in the poorest municipalities, meanwhile high-income families have access to better neighborhoods that are more expensive to live in, which at the end it is transferred to school access. Schools serving low-income population continue to suffer the negative effects of decentralization (Chingos et al., 2015, Pastrana, 2007).

In theory, competition should increase productivity of the system, therefore it was expected that public schools located in municipalities with high percentage of private-subsidized schools, would increase students' academic achievement compared to schools located in municipalities with fewer private-subsidized schools. In Chile the case is ambiguous, the gap in SIMCE scores has increased, at least in mathematics, however competition between schools has had a positive impact on students' academic achievement from public schools, when it is measured using SIMCE (Elacqua and Fabrega, 2004). This may be due to the importance that the Ministry of Education gives to SIMCE scores, by giving monetary incentives to teachers and school personnel. The National System for Evaluating the Performance of Subsidized Educational Institutions (Sistema Nacional de Evaluación del Desempeño de los Establecimientos Educacionales Subvencionados, SNED) was implemented in 1996. It Identifies the bests schools that receive state subsidize (private or public) in each region. The SNED establishes that schools whose performance qualifies as excellent within the same homogeneous group of schools will receive

a monetary incentive for the next two years (Mizala and Romaguera, 2000). One of the consequences of the implementation of SNED is that teachers are being encouraged to train students for the test.

4.3.2 Privatization

The private sector is considered efficient, effective, productive, and responsive to change in demand and supply (Torres, 2011, 2013) for the benefit of the consumers (Taylor, 2003). As the private sector is seeing effective, education is privatized under the idea of competitiveness among schools (Cavieres, 2011). Therefore, competition should increase quality, achieve efficiency, and expand individual choice (Rogers, 2013). However, creating competition among schools does not help to create collaboration to improve the quality of education to the majority of the population (Torres, 2013), leaving isolated the most needed part of the population. Competitiveness is characterized by creating standardized tests (Torres, 2011), which should lead to an increase in quality in education. However, the reality is that standardized tests only create the necessity of creating better performance in students with lower funding (Torres, 2011).

Before the military coup in 1973, education in the country had been developed to secure it as a right to the population.[11] However, with the change in the Constitution in 1980, the role of state was transformed, from being a guarantee to subsidiary (Assaél Budnik et al., 2011). Transferring the obligation of education into the hands of private sector. In that process, the emphasis was not in the unequal distribution of services (Cavieres,

[11]For example, the Law for Compulsory Education in 1920.

2011), the state was worried about the debt crisis, and thus private entities took control over the educational process in Chile.

In the early 80s, Chile adopted a marked-oriented economic system. The government was convinced that in order to fight the debt crisis it was necessary improving efficiency in the economy, thus some of the enterprises were privatized (Baer and Maloney, 1997). The privatization process included educational sector, and it started to be a consumer good and not a social right (Rogers, 2013, Torres, 2013), leaving the right of receiving quality education as a privilege for the upper class. Even with the existence of public schools, the quality that the families could access in them it was not the same as in private or private-subsidize schools. Additionally, the lack of resources of lower class families, isolated the students in the public system, without the chance to opt for a better education. The students coming from low-income families entered into the public system, meanwhile the middle class students, started to move from the public to private-subsidize schools, taking advantage from public expenditure (Estache et al., 2001).

When the private-subsidize schools were introduced into the educational system, the municipalities started to fund the students rather than the schools (Taylor, 2003). Every school would receive financial support based on students' enrollment, which did not distinguish between public and private providers (Chumacero et al., 2011), the state finance both under the same restrictions. At higher amount of students' enrolled in a schools, higher would be the resources giving by the municipality; and vice-versa. However, private-subsidize and private schools would have the advantage of having more funds because of the added fees to provide better quality of education. Meanwhile, in 1990,

the municipality support for each child was approximately US$ 14.50 per month, private institutions charged in average US$ 100 per month (Taylor, 2003). In the end, privatization led to an increase in the resources in private institutions, and not supporting public education as it was before.

The private sector started to be considered as a collaborating agent of the state. Education was commodified, and access to it was subject to economic possibility of consumers (Inzunza et al., 2011). In this case, the consumers would be the families that have the possibility to choose the education that will receive their children through chosen the school (Chumacero and Paredes, 2012). In reality, that was not the case. Due to the socioeconomic gap in the country access to education was not equal for all. Usually, low-income families could not opt for a private-subsidize school, leaving them in the public system. Therefore, they did not have the opportunity of choosing a school; it was what they can access according to their income.

Privatization and implementation of private-subsidize schools were intended to create competition among schools. Following the same idea SIMCE was created, a standardized test developed to measure the education quality. Results were intended to be public, to facilitate the school choosing process for the families (Assaél Budnik et al., 2011), as mention before. However, nowadays the decision is not made based in quality of education represented by SIMCE. It also depends on family socioeconomic level, rather than a choice based on quality. Therefore, privatizing education in Chile is reflected in fewer opportunities for low income students. Depending on public education, and private-subsidize schools that they can access according to their family income and socioeconomic status.

However, it is the state that is not taking over one of its biggest responsibilities, which is to provide quality of education to the population (López Guerra and Flores Chávez, 2006).

In Chile, the low performance in students' standardized international tests shows the failure of the government of improving education in the country. When per capita income is controlled, Chilean students tests scores are below the international average (López and Miller, 2008). Chile is one of the countries that spends the least per student, reflecting the poor results in PISA for example. When the budged is low, public education system is in risk of low efficiency, just because there are little resources left from operational activities to allow sufficient investments in adequate teacher development, special education facilities, etc. At low levels of expenditure per student, high levels of efficiency appear to be difficult to the lack of resources to invest in efficiency (López and Miller, 2008).

Over the last three decades public policies implemented in Chile had led to the dismantling of public education (Assaél Budnik et al., 2011), and the enrichment of private education. The poor performance of Chile in international tests simply reflects insufficient levels of public expenditure in education that had prevailed since the change in the Constitution. Public spending in education is not enough to decrease the gap between public and private education, the expense in the public sector is still a fraction of what the private sector invest in education. Thus, inequality is transferred from one generation to the next one, public sector has provided education to the poorest 85% of the population in Chile that depend of public schools, meanwhile private education expenditure is four times higher representing 15% of the richest population in the country. Therefore, it is

this gap in education expenditure that perpetuate inequality in resources and quality of education.

The gap between public and private expenditure in education had also increased the gap in access to higher education, when students are divided by SES. The private nature of higher education, in where public universities have high fees associated had prevented low-income students from going to the university (Pitton, 2007). For example, in 1990 only 5% of the students were coming from low-income families, meanwhile the enrollment coming from upper class students reaches 40%. The privatization process helped to increase social inequality that already existed in the country, rather than improving social mobility.

4.3.3 Voucher System Outside Chile

Some other countries have implemented vouchers for subsidizing private schools; the U.S., New Zealand, Germany, Turkey, Denmark among others. In the U.S. on example of school voucher system was Milwaukee Parental Choice Program implemented during 1990. The state provide a voucher to schools enrolled in the program (during the first year there were 7 schools participating, by 1995 there were 12) following the idea that public schools would have an incentive to improve quality, leading to no differences in academic achievement between public and private (Rouse, 1998, Loeb et al., 2011). However, in the short run, academic achievement from students selected for the program increased. Rouse in his paper examined the program and found that students enrolled in participating private schools score between 1.5 and 2.3 percentile points per year in

mathematics higher than students in the comparison group. He concluded that providing vouchers to low-income students to attend private schools could help increasing mathematics achievement, but he did not suggest that providing vouchers would lead to an increase in scores in public schools.

Evidence from New Zealand shows the experience is very similar to what happened in Chile and in Milwaukee. During 1991 it was implemented a educational reforms that introduced full parental choice of schools and encouraged competitiveness across schools (Ladd and Fiske, 2003). Staring in 1992 students did not have a guarantee enrollment in their local school, and that schools would have to compete for students. The authors showed from a teachers perspective that market oriented policies, specifically competition, reduces the quality of student learning.

In Denmark private schools are highly subsidized by the state, approximately 75% of the cost is funded by the state, while parents provide the other 25%. This idea provides access to low-income students into private schools, without the extremes fees associate with private education as mentioned before in the case of Chile. The private sector is mainly funded by vouchers, in other words, subsidized by the state. In Denmark private schools does not raise students' academic performance (Andersen, 2008), in the multilevel model developed it is shown that high performance private schools are associated with high SES, while low performance private schools are with low average SES, concluding that parents from low SES would prefer a low perform private school rather than a public school, even if that means having lower academic achievement.

Using previous literature, I attempt to outline some key learning that are used to

develop this dissertation. Overall, previous research suggest that students' academic achievement can be influenced by multiple factors associated to background characteristics: cultural capital, socioeconomic status, parental expectations, among others. Additionally, there is research suggesting that schools in Chile are highly segregated, grouping students with similar characteristics. This dissertation address the idea that students' academic achievement are still impacted by market-oriented policies implemented more than 35 years ago. Using teachers' interviews to build predictors and triangulate it employing SIMCE database. For example, do predictors identified by the teachers interviewed impact significantly students' academic achievement? Do the predictors related with the privatization and decentralization process associated with market-oriented policies?

CHAPTER 5

Research Methodologies

The purpose of this study was to come an understanding about how market oriented policies; specifically privatization and decentralization of the educational system affected students' academic achievement gap since the change in the Chilean Constitution in 1980. The combination of data collection and analytic methods was selected based on the understanding of the consequences of decentralization and privatization of the educational system, and they were used to show how those policies affected the students' academic achievement gap. The combination of qualitative and quantitative analysis provided the needed information to answer the questions.

This chapter begins with a methodology review for a mixed methods study, focusing on variables that influence students' academic achievement in Chile. The exploratory design (Creswell and Clark, 2011) was chosen to triangulate the qualitative data collected using high school teachers' interviews, and the database from a National Standardized Test (SIMCE).

The chapter follows with a review of the qualitative research tradition, and using interviews as a primary mode of data collection, an overview of the study design and a summary of the coding techniques used to identify and analyze the data. It follows with

a brief description of the quantitative database used for the triangulation, and how it was used to finally triangulate the qualitative findings.

5.1 Using a Mixed Methods Approach

Using the interview as a first method of data collection follow by an analysis of SIMCE database is a mixed methods research. Johnson, Onwuegbuzie and Turner (2007) provide a definition of mixed methods research (Johnson et al., 2007):

> "Mixed methods research is the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purpose of breadth and depth of understanding and corroboration."

Using the approach of different techniques to better understand the data collected in both qualitative and quantitatively, is one way to develop deeper understanding of how market-oriented policies impact the schooling process and students' academic achievement in Chile.

Doing qualitative and quantitative research has its advantages and disadvantages. Representing the world through stories and data is giving the same importance in developmental science (Yoshikawa et al., 2008). The research is driven by integrating both approaches that can bring an understanding of market oriented policies using both methods, rather than giving an understanding from qualitative or quantitative approach itself.

The purpose of doing a exploratory approach is to first find meaning in teachers experiences, and to give them the importance within my own research. It is an attempt to develop an understanding of how teachers see their environment, and how they interpret and share their experiences (Merriam, 2009), when talking about students' academic achievement.

5.2 Qualitative Understanding

Although this research is based on a mixed methods approach, the qualitative section represents participant knowledge and their respective stories. An ethnography study is described as a way to discover what meanings different actors are making of a situation (Anderson-Levitt, 2006) in this research, what meaning high school teachers in Chile gave to one of the most important standardized national test when talking about students' academic achievement. Understanding the process of giving a meaning (Anderson-Levitt, 2006) to the scores is representing what is happening inside the classrooms, and more important in part of the school system.

As researcher I am engaged with my own research project at the moment of conducting qualitative investigation. This research was not the exception, as a former high school teacher I understand the importance given to SIMCE from both school principals and Ministry of Education, it is one way to demonstrate that students are learning the national curriculum. However, as a teacher I also know that is idealistic for me to think that students are not being trained for the test. In some cases students are prepared to answer multiple choice questions, which is a way to train them, however, in other cases they are

simple neglected of receiving classes not measures by SIMCE (Flóres, 2013), for example close to the day when SIMCE is administered some schools stop music or art classes in post to prepare subjects evaluated by SIMCE to increase scores.

Doing at ethnography study allowed me to focus on human society and culture (Anderson-Levitt, 2006, Merriam, 2009), so what is behind SIMCE, and how teachers interpret this instrument as a way to measure students' academic achievement. The first step for doing so was to collect the necessary data to produce a cultural interpretation of SIMCE (Merriam, 2009), focusing in a case study allowed me to have a in-depth descriptive of teachers' perspectives (Merriam, 2009). The case study approach also can extend what is already know (Merriam, 2009), in this particular case, help to triangulate already existed data, from a teachers' perspective about the gap in standardized test scores, and how they recognize variables impacting students' academic achievement measured using SIMCE scores. I am interested in uncovering the meaning of introduction of market oriented policies into the educational system in the 1980s.

Some of the limitations for qualitative research are reliability, validity and generalizability (Merriam, 2009). The teachers interviews in this study are not representative of the entire population of teachers, and the interview process was not the same for every participant, some of the teachers were very straight forward to answer the questions, while others reflected din depth on the meaning and importance given to SIMCE scores by their own school. All of those are limitations of doing qualitative research, which are addressed in the triangulation process.

5.2.1 Data Collection Process

During summer of 2018, I spent two months in Chile interviewing high school teachers. I used a non-probability purposive sampling method of high school teachers with a specialization in mathematics or verbal, by networking. Purpose sampling was useful for identifying teachers who have sufficient years of experience working inside the educational system in Chile. I expected to find critical perspectives and diverse interpretation of students' academic achievement measured using standardized tests from the teachers I interviewed. First, I contacted high school teachers from when I was doing my undergraduate, and then I started the snowballing process.

The interviews were structured, open ended, audio-recorded, and each lasted from 30 to 90 minutes. The structured and open ended interviews gave me the opportunity to follow and collect all the information needed for the analysis, but also to follow up on answers that needed to be investigated deeper.

One of the main purposes of the selection process was to have teachers from different schools, i.e. the three types of school needed to be represented by more than four teachers. Description of the participants is explained in Table 5.1. The first column is the given names for each participant, second column is the total number of years of experience[1], the third column is the description of the school type, and the last column is the municipality in where the school was located.

Teachers had different background characteristics; they graduate from a variety of

[1]Numbers with (*) correspond to the years working at the same school rather than the total amount of working experience.

universities, and their professional experiences were not the same, giving a wide range of perspectives on students' academic achievement. The advantages of having a diverse sample population was crucial for a better understanding of how working inside the educational system influence teachers perspectives in standardized tests scores and the process of identification of factors influencing students' academic achievement.

Participant	Experience (Years)	School Type	Location
Derek	5	Private-subsidize	Ñuñoa
Rose	8	Private-subsidize	La Florida
Aria	5	Private	Providencia
Grace	5	Private	Peñalolen
Vera	8	Private-subsidize	Santiago
Filip	25	Private	Lo Barnechea
Penny	6	Private-subsidize	Colina
Jack	23	Private	La Reina
Callie	25*	Private-subsidize	Maipú
Malia	20	Private	Vitacura
Carol	18	Public	Puente Alto
Molly	9*	Public	Puente Alto
Justin	27	Private-subsidize	La Florida
Axel	2	Public	Ñuñoa
Nellie	26	Private-subsidize	Valparaiso
Vesper	22	Public	Santiago
Jace	6*	Public	La Granja
Elias	15	Private-subsidize	Maipú
Tori	22*	Private	Ñuñoa

Table 5.1: *Participants' characteristics.*

I interviewed 19 teachers in total from different schools; six private, eight private-subsidized, and five public. The teachers participated voluntarily in the interviews, and did not receive any compensation for their participation. All of the interviews were in Spanish[2], therefore all of the coding and analysis were made in Spanish. Challenges of

[2]The primary language spoken in Chile is Spanish.

language differences are not new (Halai, 2007), and to avoid missing information because of the translation process only the most important findings were translated into English.

5.2.2 Interviews

The decision to use interviews as the primary method for qualitative data collection was based on the kind of information that I as a researcher wanted to collect (Merriam, 2009). In my study I wanted to better understand teachers perspectives and learn about how they see the process of learning, and what factors affect students' academic achievement, i.e understanding the lived experiences of other people and the meaning they make of that experience (Seidman, 2013). The interview process gave the teachers the opportunity to share their experiences from the classrooms in a safe space.

One of the goals for conducting specifically ethnographic interview was to understand the shared experiences, practices, and beliefs that arise from shared cultural perspectives (Brenner, 2006). As a former high school teacher I had invested considerable time participating in classroom activities. Thus, even when the immersion process was two months I still consider this study as ethnographic, since I was immerse in the teaching culture and that gave me the advantage of understanding teachers from two perspectives, as a teacher and as a researcher.

The firs set of questions in the interview were designed to collect demographic information about teachers, some of the information was collected during the period of contacting and setting the interview meeting. The following questions were related to students' achievement, the teachers own vision and opinion about SIMCE, and how they

perceive that standardized tests reflect quality of education. They were divided into four groups: demographic information, students' achievements, competitiveness, and school choice, as shown in Appendix A. There were also other demographic information about teachers that was collected when I contacted them, thus is not in the interview protocol.

When all the data from interviews was collected, I started the process of coding and analyzing it. First I created dimensions, which are defined by the actor involved in educational process: Family, student, teacher, or school. For each dimension, sub-dimensions merged from the interviews, which later were used as independent variables. In the next section I present the coding process for the teachers' interviews.

Coding the interviews

I collected 19 interviews in total, and each one of them was recorded and transcribed in its original language. The coding part of this research was a result of two manual processes. For the first part I used initial coding and in vivo coding (Saldaña, 2015); initial coding is the first review of the interviews and is open-ended (Saldaña, 2015). In vivo coding draws from the participants' own language for codes (Saldaña, 2015), meaning it finds codes from phrases in the data from the participants themselves. Those two methods of coding were helpful in answering my research questions asked about which variables or factors teachers identify impacting students' academic achievement.

The second round of coding was enhanced by the frequency list that I developed from the initial codes. The main purpose of this stage was to identify categories in teachers' interviews when I asked them to identify variables or factor that they though affect stu-

dents' academic achievement. From the categories identified using a concept and pattern coding techniques (Saldaña, 2015), I divided them into bigger categories, which were defined by the actor involved in the educational process. From that process I ended up with four dimensions, evolved from the initial categories created. The purpose of the second cycle of coding was to develop major themes from the data, and to find explanations in the data (Saldaña, 2015), using the already existed codes from the first cycle of coding.

For the final round of coding, I constructed the final version of the dimensions created, and within each dimension I build sub-dimension. For example, family dimension has five sub-dimensions: cultural capital, motivation, parental involvement, parents' expectations, and socioeconomic status. Each one of them was created to answer the question of which variables or factors teachers associate with students' academic achievement, and to further understand which one of the dimensions created have a higher impact in SIMCE test scores.

From this organization of dimensions and sub-dimensions, I developed models explaining how much of the variance in change in SIMCE test scores are associated with each sub-dimension. The idea to create dimensions was to understand if the policy changes in Chile, specifically related with the privatization and decentralization of educational system still have an influence in students' academic achievement. Decentralization is related with school and teacher dimension, meanwhile privatization is defined as family dimension, which will be further explained in Chapter 8.

5.3 Quantitative Understanding of the Data

In the present study I carried out a series of analysis to explore which sub-dimensions identified by teachers were affecting students' academic achievement. In this section, first I present the database and measures used in this study, including how the variables were build from teachers' interviews, specifically how each sub-dimension within its respective dimension (family, student, school, and teacher) was developed. Second I present the methodology used to choose statistically significant variables for each sub-dimension. Finally, I describe the analyses used to investigate if the variables identified by teachers have a significant effect in SIMCE mathematics scores.

5.3.1 Database: SIMCE from 2016

The quantitative analysis was made using SIMCE database from 2016. This national standardized test was created to have an external measure for school quality, and to give relevant information to the different actors involved in the process of education. Its main purpose was to help with the quality and equity within educational system, providing information about students' academic achievement in different learning areas of the national curriculum.

The background information include demographic characteristics of families (e.g. educational level of parents, income, etc.), students' characteristics (e.g. hours studying, interests for reading, expectations, assessment of teaching practices, etc.), and teachers' information (e.g. years of experiences, academic level, methodologies used during classes, etc.). All of this information came from their respective questionnaires.

SIMCE is implemented every year since 1988, and measure achievement in verbal, mathematics, life sciences, history, geography, social sciences, and English. The test is apply to second, fourth, sixth, and eighth grade for elementary school students; and for second and third grade high school students. Every year is apply to different grades, and the topics evaluated also vary, however schools are informed beforehand about which subject from the national curriculum will be evaluated. For this study, I used database from 2016, for second grade high school students.

The database from 2016 was used because it provides de questionnaires from mathematics teachers, the most recent one is from 2017, however the questionnaire was implemented for verbal teachers. Since the sample for the interviews is mostly math teachers, it is consider to be more relevant for triangulating the data.

The questions used to create each independent variable, or set of them, for each subdimension is presented in Appendix B. The questions are shown in its original language, and it also shows if the question is from parent, student or teacher questionnaire. Additionally, it is presented the range values for each question.

As it was mention in the introduction, SIMCE scores do not have a minimum or maximum established. Each year the average and standard deviation are fixed in the first evaluation of each series. Thus, each year every test has a different minimum and maximum for all grades. As a reference, 2016 descriptive statistics are presented in Table 5.2 for second grade high school students for both mathematics and verbal. Usually, mathematics scores tent to be higher in average than verbal, and the range for the scores is wider.

	Mean	Standard Deviation	Minimum	Maximum
Mathematics	265.506	65.537	97.280	425.720
Verbal	247.146	52.395	129.130	401.640

Table 5.2: *Descriptive SIMCE scores for 2016.*

5.3.2 Simple and Multiple Linear Regressions

The main purpose of this study was to investigate the effects of each sub-dimensions created from teachers' interviews in students' academic achievement. A simple and multiple regression were employed to address from which dimension was coming the highest percentage of variance in change in SIMCE scores. This was the first step for understanding the percentage of variance of each dimension was to analyze if the school system was acting to maintain the actual social structures, or if it influenced positively students' academic achievement, promoting social mobility.

Those first analysis were made using two statistical techniques for data analysis: Simple (SLR) and Multiple Linear Regression (MLR), using quantitative and categorical variables. The idea to use SLR or MLR was to find a fit line that can predict the dependent variable, in this case, SIMCE test scores. The general linear model using one predictor:

$$y_i = \alpha + \beta_1 x_i + \epsilon_i \tag{5.1}$$

Where:

α is the intercept of the line that best fits the data;

β is the slope of the line that best fits the data; and

ϵ_i is the error of prediction, also called residual or disturbance.

This model was used for the two sub-dimensions that have only one predictor (or independent variable): extracurricular activities (school dimension) and motivation (teachers dimension).

The general linear model using two or more predictors:

$$y_i = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_n x_{ni} + \epsilon_i \tag{5.2}$$

α is the intercept of the line that best fits the data;

β_1 is the change in Y for a 1-unit change in x_1 controlling for all other variables in the equation; x_n; and

ϵ_i is the error of prediction, also called residual or disturbance.

In the case of categorical variables, I created $k - 1$ groups for each value associated with the answers provided, where k is the number of different values for the categorical variable. For analyzing the data, one reference group was selected, usually the one with more answers. For example, if the categorical variable has five values, I created four different groups, and the value that was not used to create a group was used as reference. The coefficients for a model using categorical variables is:

$$y_i = \alpha + \beta_1 x_{1i} + \ldots + \beta_n x_{ni} + \epsilon_i \tag{5.3}$$

α is the mean Y scores for group coded with all zeroes;

β_1 difference between mean of group coded 1 on x_1, and the group coded with zeroes on all dummy predictors;

β_n difference between mean of group coded 1 on x_n, and the group coded with zeroes on all dummy predictors; and

ϵ_i is the error of prediction, also called residual or disturbance.

Significance of each β_n means that there was a statistical significant difference between means of Group n and the reference group. However, if the difference was not significant for Group 1 and the reference group, and the other differences were significant, all of the groups were added to the model, because I was measuring one categorical predictor.

For building the model for each dimension, using the statistically significant values obtained in the first round of analysis, I developed a model in where each sub-dimension was entered as a block. Each variable is added into the model from the highest R^2 value obtained in the individual analysis. The first model is:

$$y_i = \alpha + \beta_{C1}x_{C1} + \ldots + \beta_{Cn}x_{Cni} + \beta_{Q1}x_{Q1i} + \ldots + \beta_{Qn}x_{Qni} + \epsilon_i \tag{5.4}$$

Where:

α is the intercept of the line that best fits the data;

β_{C1} difference between mean of group coded 1 on x_1, and the group coded with zeroes on all dummy predictors;

β_{Cn} difference between mean of group coded 1 on x_n, and the group coded with zeroes on all dummy predictors;

β_{Q1} is the change in Y for a 1-unit change in x_1 controlling for all other variables in the equation; x_n; and

ϵ_i is the error of prediction, also called residual or disturbance.

For each categorical variable an interaction variable was created using every qualitative variable in the model to check that the slopes are parallel enough. If the change in R^2 was not significant, I assumed that the slopes were parallel, and the interaction terms were not added into the final model. Given the large sample size, differences in change in R^2 greater than 0.01 were consider significant. If an interaction effect was added into the model, the predicted SIMCE scores equation is:

$$\begin{aligned} y_i = \alpha + \beta_{C1}x_{C1} + \ldots + \beta_{Cn}x_{Cni} + \beta_{Q1}x_{Q1i} + \ldots + \beta_{Qn}x_{Qni} + \\ + \beta_{I1}x_{I1_1} + \ldots + \beta_{In}x_{I1_n} + \beta_{Ij}x_{Ij_1} + \ldots + \beta_{Ij}x_{Ij_n} + \epsilon_i \end{aligned} \tag{5.5}$$

Where:

$\beta_{I1}x_{I1}$ is the interaction effect for Group 1 and quantitative variable 1;

$\beta_{In}x_{In}$ is the interaction effect for Group n and quantitative variable 1;

$\beta_{I1}x_{I1}$ is the interaction effect for Group 1 and quantitative variable j; and

$\beta_{In}x_{In}$ is the interaction effect for Group n and quantitative variable j.

This process was repeated for every quantitative variable, until I could assume that the slopes were parallel. However, if the change in R^2 was greater than 0.01, the interaction effect was consider significant, and it was added into the final model.

Principal Component Analysis

Some variables used in the analysis were build using Principal Component Analysis (PCA) to reduce the number of items while retaining as much of the original information, and to create latent variables. Some of the sub-dimensions identified by teachers could not be directly measured, thus, the latent variables were created using different items. I wanted to determine the number of latent variables or factor that account for the variation of a set of items (Brown, 2006), in this case questions applied to students, teachers, and parents. Were these different questions selected reflecting a single variable? (Field, 2009). I wanted to reduce a large set of questions that are inter-correlated to a smaller set of composite variables, and use these as the unit of analysis in the regression models.

Principal component analysis is concerned only with establishing which linear components exist within the data and how a particular variable might contribute to that component (Field, 2009). Equation of the common factor model is represented by:

$$\begin{aligned} Y_j &= \lambda_{j1}\eta_1 + \lambda_{j2}\eta_2 + \ldots + \lambda_{jn}\eta_n + \epsilon_j \\ \text{Factor}_j &= \lambda_{j1}\text{Variable}_1 + \lambda_{j2}\text{Variable}_2 + \ldots + \lambda_{jn}\text{Variable}_n + \epsilon_j \end{aligned} \tag{5.6}$$

Where:

y_j represents the *j*th of *p* indicators obtained from a sample of *n* independent sub-

jects;

λ_{jm} represents the factor loading relating variable *j* to the *m*th factor η; and

ϵ_j represents the unique variance for the *j*th factor.

Figure 5.1 shows a graphical representation of how the questions are loaded into the final factor, including the unique variances associated with each item.

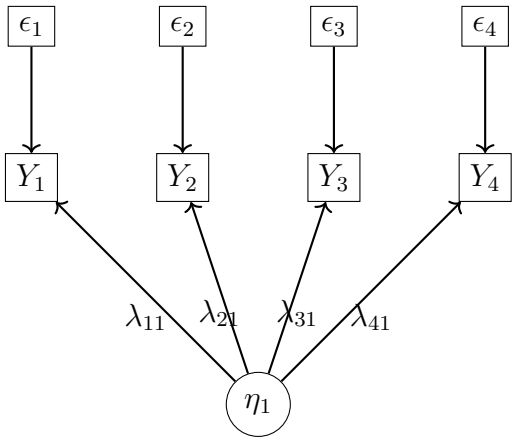

Figure 5.1: *Path diagram of the one-factor model.*

Principal Component Analysis assumes that the total variance was equal to common variance, meaning that there was no unique variance associated with each factor loading. As total variance can be divided into common and unique variance, in this case, no unique variance means that common variance takes up total variance. Thus, there was no ϵ_j in the final model.

To decide if PCA was adequate for the analysis, I looked into the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, and the anti-image correlation and covariance matrices. KMO values higher than 0.8 were good to consider the PCA significant, and continue with the analysis, otherwise, the questions were ana-

lyzed independently. Additionally, to select the optimal number of components only the ones that have eigenvalues greater than 1 were retained. The first component will always have the highest total variance and the last ones will have the least. For purposes of this research, all of the values for total variance explained lies between 54 and 70%, only one of them was less than 54%, which was retained because the change in R^2 was the same if one component was used for the regression than if two components were used. In other words, using one or two components did not increase the R^2 value, thus only one component was retained.

Reliability was represented using a Cronbach's α to verify if the factor created was consistent with the construct that was measuring. Meaning, every item, or question used to build the factor, should represent the same construct. Values between 0.7 and 0.8 were consider acceptable, meaning that those factors were retained for the future model. When values from Cronbach's α were lower than 0.7 and when deleting items did not improve reliability, the factor was not longer used and each question was entered into the model independently.

5.3.3 Hierarchical Linear Model

Using the municipalities from where teachers worked[3], I analyzed the data using use a multilevel model (or hierarchical linear model) at 3 levels. The multilevel approach allowed for different regression coefficient for each predictor its corresponding level. Hi-

[3]Valparaiso and La Granja were excluded from the analysis. Valparaiso because I wanted to do the analysis using only municipalities from the Metropolitan Region, and La Granja because it did not have any private school in the whole municipality.

erarchical Linear Model (HLM) was used to determined the variance explained by each dimension identified by teachers. For this analysis, student and family dimension were used in Level-1, nested within teacher (Level-2), which were also nested within schools (Level-3). This allowed the examination of the effects of students' predictors separately from the ones from classroom and school.

Unconditional Model (Model 1)

First, I used a three-level null model with no predictors to test whether the intercepts randomly vary between groups, and to check the Interclass Correlation Coefficient (ICC). In other words, the null model was used to partition the variance in terms of SIMCE scores across the three levels in the educational structure: students and family, teachers (classrooms), and schools. The level-1 (student-level) equation for SIMCE scores is:

$$\text{SIMCE}_{ijk} = \pi_{0jk} + \epsilon_{ijk} \tag{5.7}$$

Where:

$i = 1, 2, \ldots, n_{jk}$ represents student within classroom *j* in school *k*;

$j = 1, 2, \ldots, N_k$ represents classroom within school *k*;

$k = 1, 2, \ldots, K$ represents school;

SIMCE_{ijk} is the predicted SIMCE scores for student *i*, in classroom *j* in school *k*;

π_{0jk} is the mean SIMCE score for students in classroom *j* in school *k*; and

ϵ_{ijk} is the random student component, the difference between each student from the overall mean of SIMCE scores in the classroom.

At the classroom or teacher level (level-2) model, each classroom mean, π_{0jk}, is view as an outcome varying randomly around some school mean.

$$\pi_{0jk} = \beta_{00k} + r_{0jk} \tag{5.8}$$

Where:

π_{0jk} is the mean SIMCE score for students in classroom *j* in school *k*;

β_{00k} is the mean SIMCE score for students in school *k*; and

r_{0jk} is the random classroom effect, the deviation of classroom *jk*'s mean from the school mean.

At school level (level-3), it is represented the variability among schools. School means, β_{00k}, vary randomly around a grand mean:

$$\beta_{00k} = \gamma_{000} + \mu_{00k} \tag{5.9}$$

Where:

β_{00k} is the mean SIMCE score for students in school *k*;

γ_{000} represents the gran mean of SIMCE scores across schools in the sample; and

μ_{00k} is the deviation of each school mean from the grand mean SIMCE scores across schools.

The combined unconditional model replacing 5.8 and 5.9 into 5.7 is:

$$\text{SIMCE}_{ijk} = \gamma_{000} + \epsilon_{ijk} + r_{0jk} + \mu_{00k} \tag{5.10}$$

This model allowed to estimate the proportion of variance that is within classrooms, among classrooms within schools, and among schools. Where ϵ, r, and μ are assumed normally distributed, having a mean of zero, and variances σ^2, τ_π and τ_β respectively. That is:

$\sigma^2/(\sigma^2+\tau_\pi+\tau_\beta)$ is the proportion of variance within classrooms;

$\tau_\pi/(\sigma^2+\tau_\pi+\tau_\beta)$ is the proportion of variance among classrooms within schools; and

$\tau_\beta/(\sigma^2+\tau_\pi+\tau_\beta)$ is the proportion of variance among schools.

Conditional Model (Model 2)

The unconditional model allowed estimation of variability associated with the three levels (student, classroom and school). Additionally, part of the variability at each level could be explained using variables or predictors at each level. In other words, students' background characteristics, classroom characteristics, and school characteristics could be used as predictors. Also, some of the relationships at classroom and school levels may vary randomly among these units.

The following model assumed random intercepts and fixed predictors at level-1, and no predictors for level-2 and level-3; each student's SIMCE score is predicted by the intercept that will vary across classrooms and schools. In other words, the slope for the predictors was the same across all classrooms at student level. The equation for predicting SIMCE scores at student level (level-1) was build using the significant values obtained in the MLR for each dimension, and it is:

$$\text{SIMCE}_{ijk} = \pi_{0jk} + \pi_{1jk}\alpha_{1ijk} + \pi_{2jk}\alpha_{2ijk} + \ldots + \pi_{Pjk}\alpha_{Pijk} + \epsilon_{ijk} \tag{5.11}$$

SIMCE_{ijk} = expected SIMCE score for a student, in classroom *j* in school *k*;

π_{0jk} = intercept for classroom *j* in school *k*;

α_{1jk} = parents' expectations of student *i*, in classroom *j* in school *k*;

α_{2jk} = socioeconomic status of student *i*, in classroom *j* in school *k*;

α_{3jk} = parental involvement of student *i*, in classroom *j* in school *k*;

α_{4jk} = personal skills of student *i*, in classroom *j* in school *k*;

α_{5jk} = study habits of student *i*, in classroom *j* in school *k*;

π_{Pjk} = level-1 regression coefficient for the relationship between student characteristic mentioned above, and SIMCE scores (outcome); and

ϵ_{ijk} = is level-1 random effect that represents the deviation of students *i*, in classroom *j* in school *k* from the predicted score based on student level model.

Since, parental expectations produced a higher R^2 change than personal expectations, the last variable was removed from the multilevel model analysis.

First, using a smaller sample size, but representative of the variance explained in the unconditional model, an exploratory analysis was developed to investigate the significance of adding random sloped to the model. At classroom level (level-2), the intercept (π_{0jk}) and the slopes (r_{Pjk}) are initially treated as randomly varying around their school mean without any classroom or teacher predictors. Therefore, the conditional level-2 equation for the intercept treats the students level predictors as a function of the school mean intercepts (β_{00k}) and a fixed effect for classroom within school (π_{0jk}). Students slopes are described as a function of school mean slope (β_{p0k}) and using a random effect for the slopes (r_{pjk}). The equations are:

$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$

$$\pi_{1jk} = \beta_{10k} + r_{0jk}$$

$$\pi_{2jk} = \beta_{20k} + r_{2jk}$$

$$\pi_{3jk} = \beta_{30k} + r_{3jk}$$

$$\pi_{4jk} = \beta_{40k} + r_{4jk}$$

$$\pi_{5jk} = \beta_{50k} + r_{5jk}$$

Where:

β_{00k} is the mean SIMCE score for students in school *k*;

π_{0jk} represents the deviation of each classroom mean from its school mean SIMCE

score;

β_{p0k} is the mean slope for the relationship between SIMCE score and the corresponding predictor at student level α_{Pjk} at classroom *j*; and

r_{pjk} is the deviation of each classroom slope from the mean slope at its school *k*.

At school level (level-3), the β_{p0k} parameters for the school mean intercept and slopes are treated as randomly varying around a grand mean across all schools in the sample (γ_{p00}) and a random effect (μ_{p0k}):

$$\beta_{00k} = \gamma_{000} + \mu_{00k}$$

$$\beta_{00k} = \gamma_{100} + \mu_{10k}$$

$$\beta_{00k} = \gamma_{200} + \mu_{20k}$$

$$\beta_{00k} = \gamma_{300} + \mu_{30k}$$

$$\beta_{00k} = \gamma_{400} + \mu_{40k}$$

$$\beta_{00k} = \gamma_{500} + \mu_{50k}$$

$$\beta_{00k} = \gamma_{600} + \mu_{60k}$$

Where:

γ_{000} is the grand mean SIMCE score for students in the sample;

μ_{00k} is the deviation of each school mean from the grand mean of SIMCE scores across schools;

$\gamma p00$ is the mean slope for the relationship between SIMCE score and the corresponding predictor at student level α_{Pjk} at school *k*; and

μ_{pjk} is the deviation of each school mean slope from the gran mean.

Since the results using a smaller sample size were not significant for random slopes, model 2 used random intercepts and fixed slopes at classroom and school level.

Random Intercepts Models using Level-2 predictors (Model 3)

This model uses no predictors at the school level, therefore in this model were added only school characteristic into its respective level (level-2), the intercepts (π_{Pjk}) were treated as a function of classroom predictors. The classroom mean SIMCE scores was adjusted to take into account student characteristics, π_{0jk} intercept is represented as three classroom level characteristics:

$$\pi_{0jk} = \beta_{00k} + \beta_{01k}\chi_{1jk} + \beta_{02k}\chi_{2jk} + \beta_{03k}\chi_{3jk} + r_{0jk} \tag{5.12}$$

Where the classroom predictors are:

$\pi_{0jk} =$ overall mean of SIMCE scores for students in classroom *j* of school *k*;

$\beta_{00k} =$ mean SIMCE score for a student in school *k*;

$\chi_{1jk} =$ affectivity of teacher in classroom *j* of school *k*;

$\chi_{2jk} =$ contract type of teacher in classroom *j* of school *k*;

χ_{3jk} = academic level of teacher in classroom *j* of school *k*;

β_{0Nk} = level-2 regression coefficient for the relationship between classroom characteristics and adjusted classroom mean SIMCE scores; and

r_{0jk} is the deviation of the true mean for each classroom from the mean SIMCE scores in the school.

Random Intercepts Models using Level-3 predictors (Model 4)

The last part of the analysis was classroom nested within schools, allowing predictors at the school level (level-3). It was developed with the idea that classroom characteristics also influence SIMCE scores. The β_{00k}, within school intercept, it was treated as a function of the grand mean across all schools, γ_{000} and three school characteristics:

$$\beta_{00k} = \gamma_{000} + \gamma_{001}\phi_{1jk} + \gamma_{002}\phi_{2jk} + \gamma_{003}\phi_{3jk} + \mu_{00k} \tag{5.13}$$

Where the classroom predictors are:

β_{00k} = mean SIMCE score for a student in school *k*;

ϕ_{1jk} = average discipline in school *k*;

ϕ_{2jk} = average cultural capital in school *k*;

ϕ_{3jk} = average well-rounded education in school *k*;

γ_{0Nk} = level-3 regression coefficient for the relationship between school characteristics and adjusted school mean SIMCE scores; and

μ_{00k} is the deviation of expected values based on school characteristics.

The dependent variable for multilevel analysis was SIMCE mathematics scores, teachers questionnaires for 2016 only included mathematics teachers, thus dependent variable was mathematics SIMCE scores. Teachers questionnaires for 2016 only included mathematics teachers, thus predicting verbal scores at classroom level was not coherent with the questionnaires from the teachers.

The models were analyzed as follows:

1. Unconditional model using no predictors.

2. Conditional model using only predictors at student level (level-1).

3. Random intercepts model adding classroom predictors (level-2) to the previous model.

4. Random intercepts model adding school predictors (level-3) to the previous model, in other words, having predictors at the three levels.

The following chapters 6 and 7 provides the findings from teachers' interviews (Chapter 6) and from the triangulation process using SIMCE database (Chapter 7) respectively. It will present the dimensions and sub-dimensions that represents variables for the quantitative analysis, and how those variables were developed. For a description of the questions used to build the variables look at Appendix C.

CHAPTER 6

Analysis from Teachers Interviews

Following a review of the literature and the background information relevant for the study, and the methodological orientation, in this chapter I present a discussion of the results from teachers' interviews. This chapter explores teachers' opinions regarding students' academic achievement, and how those are related to market-oriented policies implemented in Chile.

This chapter answer the first question driving this dissertation: What are the variables that teachers identify as affecting students' test scores? To doing so, the chapter presents all the variables that teachers associate with students' academic achievements. The variables are divided into four dimensions depending on the type of actor involved: family, school, teacher, or student. The first part of the analysis correspond to family variables, following by school and teacher variables, and end with students' variables.

The four dimensions were created to differentiate which actor is directly influencing the differences in achievement gap, and then to create the multilevel model analysis. Each dimension is divided into a number of sub-dimensions, which will be used as independent variables for the quantitative analysis. Figure 6.1 below presents the coding results of teachers' perspectives on students' achievement divided by dimensions.

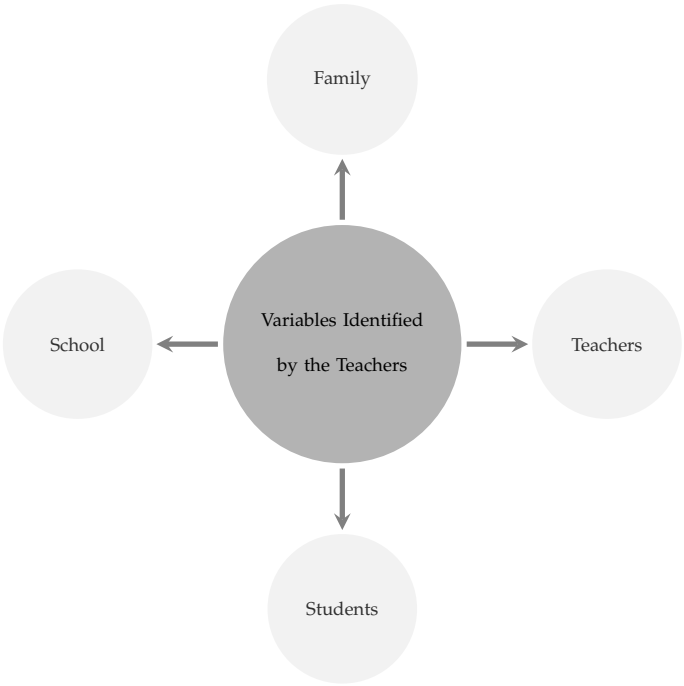

Figure 6.1: *Four dimensions identified by language and mathematics high school teachers.*

Interviews were designed to know which variables the teachers think affect students' achievement. The categories of how teachers view students' achievement, and their opinion about what is affecting students' results in standardized tests help answer Research Question 1 and 3. The teachers had different opinions and critiques, some of the differences can be associated with school type, or socioeconomic status, however, that was not true for every variables identified. Teachers' variables have been divided into four dimensions; family, school, teacher, and student dimension.

6.1 Family Variables

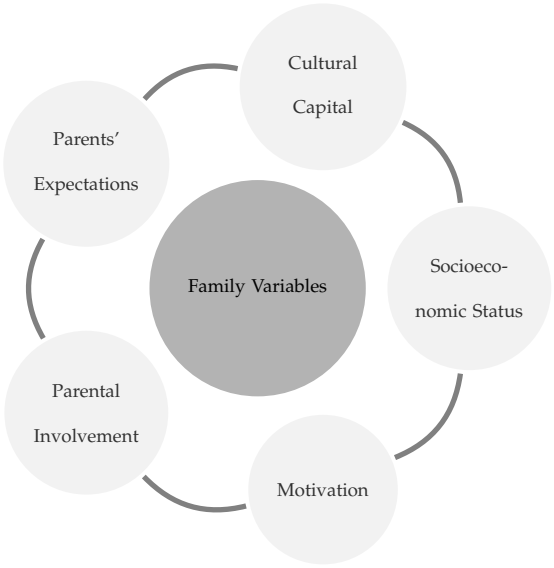

Figure 6.2: *Five sub-dimensions for the family variables.*

Figure 6.2 presents the five sub-dimensions identified by teachers. Some teachers are able to name variables that are related with family. They believe that, in general, family can affect students' achievement. For example Derek, a teacher from a private-subsidized school, states "this is a school in where the children that arrive, not all but many, have this family and economic instability, therefore, also the grades are related to that, I would say, it would depend on the case of each student, but in general, grades are bad." In particular he mentions that socioeconomic status is one of the variables that affects grades in general, and therefore students' achievement.

A teacher from a private school also mentions "there are some schools in where it is impossible to cover the whole curriculum, because you are exposed to complex situations inside the classroom, and it is not for behavioral issues, it is not for that, it is because the reality of the family." She is aware that family plays an important role in students'

achievement, and when students come from vulnerable families, the role of the teacher is shifted from being able to cover the curriculum to taking care of the students. Thus, teachers who work in vulnerable schools are exposed to complex family situations, without having enough preparation to be able to face them, and not put the national curriculum as priority.

There are teachers who associate the good results of the students with family commitment. Tori says "when there is a commitment from the parents the kids get better results, so that's why I think family is very strong factor." In general, she states that family has the ability to improve students' achievement, and that teachers can perceive when the family is involved. Nellie also mentions that "the compromise, the support that a family provides." In more general words, Elias says "with my years of experience, I believe that the family environment is very important."

Table 6.1 show that in general, teachers think that family has an impact on students' achievement, and when compared to other dimensions, family is mentioned most often among teachers. Out of 19 participants, 17 teachers named a variable related with the family. Some of the sub-dimensions identified are described below.

Cultural Capital

Cultural capital is one category within the family dimension recognized by teachers. It is important to highlight that cultural capital is not modifiable in the short term, that is, if a student comes with low cultural capital, the process of schooling could be a determining factor in improving academic achievement. For example, a public school recognized for

Participant	Variable 1	Variable 2	Variable 3	Variable 4	Variable 5
Derek		Expectations	Involvement		SES
Rose			Involvement		
Aria			Involvement		
Grace		Expectations			
Vera			Involvement		
Filip	Cultural Capital				SES
Penny					
Jack					
Callie			Involvement		
Malia	Cultural Capital				
Carol				Motivation	SES
Molly			Involvement		
Justin		Expectations			
Axel		Expectations	Involvement		
Nellie		Expectations	Involvement	Motivation	
Vesper	Cultural Capital		Involvement		
Jace			Involvement		
Elias		Expectations	Involvement		SES
Tori			Involvement		

Table 6.1: *Codes for family variables identified by the teachers.*

having high scores in standardized tests, will have most likely have enrollment that is highly competitive.

Three teachers identified cultural capital, two of them from private schools, and one from a highly competitive public school. Filip, a teacher from a private school says "[Students' achievement] I believe that for sure are related with the cultural capital of their family." He also mentions his students asked questions regarding complex definitions "when they talk to me about the thing that they talk about during lunch, I had never experienced that, a third grade boy arrives and tells me: my older brother was looking at this mathematical model [...] and I ask where did you learn that? And he tells me that his brother is in his fourth year of engineering and he is seeing that; so obviously your

[knowledge] is higher than the national average." He is able to recognize that students in the schools that come from families with high cultural capital helps them to have advanced knowledge in topics not usually thought at high school. However, this is not true in every school.

Surprisingly, Malia, a language teacher at a private school explains "[that] there is the cultured, uncultured, formal, and informal language, and we see in what situations they occur. I tell them [the students] that for Ferdinand Saussures, they will always be in the cult stratum [...] the fact that they have the possibility to travel, because Ferdinand Saussure said that they had access to libraries, access to the internet, access to all the books, a library in the school with everything, parents that have the resources; for all they are girls who should have higher cultural capital than children coming from low income neighborhoods that arrives home, that does not have internet, that parents luckily know how to read, or are alcoholics, or do not worry about the child academic improvement, for example." She emphasizes that students from her school already come with an advantage since them come from families with high cultural capital, and this gives them an advantage to have higher academic achievements compared to students who have a lower cultural capital.

It is important to highlight that teachers from private schools mention that family's cultural capital is important when assessing student achievement than teachers from public schools. Perhaps they are able to see the advantage that students from their schools have compared to students from schools where families have less cultural capital. However, Vesper, a public school teacher mentions "[students' achievements] may be related

with cultural capital, the cultural capital students come to school with has been decreasing considerably in the last few decades." She notes that in the school where she works, cultural capital has decreased in the past few years. Looking at SIMCE scores, in language, see Figure 6.3, in the last 10 years reflects that the scores in general have decreased.

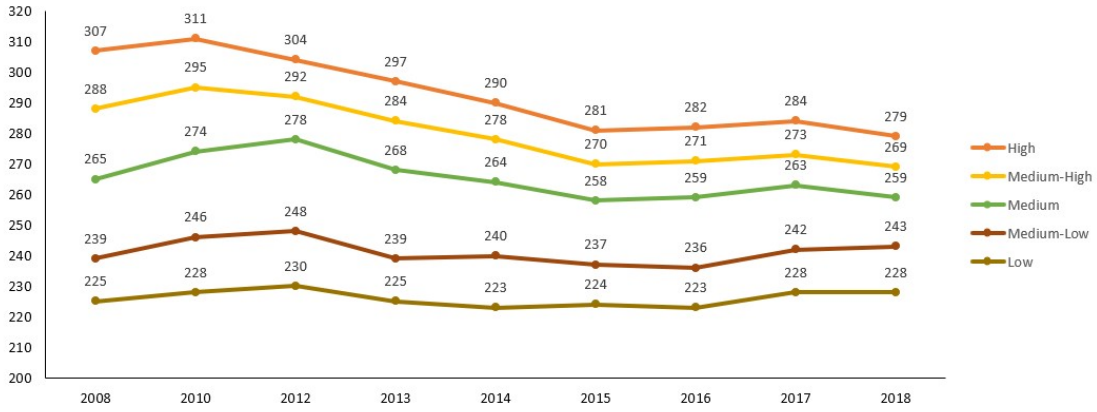

Figure 6.3: *SIMCE Language scores for second-grade high school students divided by socioeconomic status for the last 12 years.*

In Figure 6.3, it is possible to see that scores in language have been decreasing over the last 10 years. This supports the idea that cultural capital is in some way affecting students' achievement. Students coming from medium, medium-low, and low socioeconomic statuses have not decreased their scores significantly, however students from medium-high, and high SES households have seen a decrease in their scores by more than 20 point on average.

Parent Expectations

With consistent expectations, students know what's expected of them at home. This allows students to feel more confident and engaged with their own education. Families who set high expectations can raise their child's academic achievement. Students who

have clear expectations from their families also feel more confident, engaged and connected to their own learning process.

Teachers are able to recognize the importance of expectations. Nellie states "[Students' academic achievement] is related with family's expectations." Also, Justin states "I think that parent expectations influence [students' achievement] and also teachers' expectations regarding the students." This teacher also says that in some ways teacher expectations could help meet family expectations because when expectations are low from parents "teachers sometimes spend more time than the parents with the students, and if the teachers implant in their mind that we are expecting something from you and that you are good."

Parent expectations also are mentioned by Axel, a teacher from a public school, he says "[academic achievements are related to] expectations, there is a high expectation, students come from different, we know by record that they come from different municipalities, so there is an expectation that coming here is for something." This particular school is one of the best ranked within the public system, that is why the teacher mention that students come from different municipalities to be able to attend this school. Axel also refers to the problem created by the market oriented model implemented in Chile. When the Chilean school system was decentralized, the municipalities started to make the administrative decisions for the schools, in order to take charge of the students coming from their own municipality. However, this teacher can notes that students have to travel long distances to access quality public schools.

Nellie, a teacher from Valparaiso mentions "[students' achievement are related with]

family expectations, family compromise, and parent involvement." She also mention the importance of family compromise and support, which is also related with family dimension.

One of the teachers talks about the profile of families that choose the school he works at: "[these families] also have high expectations, pursuing higher education in public universities." He notes that the families specifically choose this school because parents have high expectations of their children.Relatively, Derek mentions that families choose the school he works at because parent expectations are low, "in my case they choose the school because it is a poly-technical school. In their third and fourth year they can choose a specialty, so they make sure that the students graduate from high school with a technical degree. Which means unconsciously, that the parents are not thinking the student will to enter to the university. What they think is that they enter this school and will graduate ready to work. Instead in another type of family the student is enrolled into a scientific – humanist school, so later the student will enter the university and can continue developing." According to Quality Agency of Education (Agencia de Calidad de la Educación) in Derek's school performance level is medium-low, which reflects what he said about the school.

Parental Involvement

Out of 19 teachers interviewed, 12 identified parental involvement, participation, or commitment as a variable affecting students' academic achievement. Some teachers were able to identify how the different levels of parental involvement affect students academic

achievement. Other teachers mention when the school committee chooses a family to enroll, they prefer families committed to the schooling process.

When teachers talk about parental involvement, they mention how the absence of it affects student academic achievement. Vera mentions "the family is also very absent [...] it is a family that is not committed with the school [...] on average there are between 10-13 parents absent [from a total of 45] in a parent meeting." She notes that families are not involved in the process of education in her school, leaving the responsibility completely to the school rather than being involved themselves, which is reflected in SIMCE scores and academic achievement. Axel also states that "we could infer that the non-participation of a family is connected to a low-performance student; we could understand it this way." He is saying that a family that is not involved in the educational process probably can be associated with low-performance of their child in his school.

A teacher with more than 15 years of experience compares both students from nowadays with students from 10 years ago. Vesper states "the family was more interested in their [students] reading, I do not know, a child arriving without having read a book for the test was once a year." She talks about the responsibility of the parents when comes to students' assignments. Nowadays they do not care if the student comes to a test without having read the book. Years ago parents were responsible for students' test scores.

Callie mentions "there is not support from home in the school, for example if we send a note to the parents that their child is not doing her/his homework the past couple of months, the parents read it, but they do not worry about the student catching up." She notes that parents are not actively involved in their children's education. They worry

about being present, however they are not completely involved, meaning that students are not fulfilling their academic responsibilities. Elias also notes the lack of involvement "[the families are involved] for some time, but when they enter high school, they are left alone, but families are worried about the results, they are worried about the grades." Until a certain point, families are involved in the educational process, however it appears that when they start high school families do not maintain involvement as much as before.

Throughout the years the relationship between the family and school had changed. When interviewing Tori discusses how the family has changed, and how this change in the family influences students' academic achievement:

> Tori: I think that home influences a lot, you realize when there is concern in a house, the things are clear, the objectives are determined, the children are super methodical, they are aware of what they are doing.
>
> *Interviewer: Could it be that the family that comes to the school has changed?*
>
> Tori: I think that, now it is not a matter happening only here, that there are certain important changes in the families, but yes, it could be.
>
> *Interviewer: You mentioned before that family is an important factor in academic achievement, can it be that family is no longer involved?*
>
> Tori: [...] I realize that there is a nucleus that works in a certain way, that today is not seen in the same way as before.

She mentions the importance of a home where the parents are committed and set clear rules, the children tent to perform better in school. She as a teacher can notice when there is family support. Molly says "it also has to do with parents or proxies' concern." She

believes that when a parent or proxy is committed with academic achievement, students will improve their learning. It is important to highlight that when parents are compromised with the school, the educational process may have better outcomes for the students.

There are teachers who do not mention compromise directly as a factor affecting students' academic achievement. However, when the schools have the opportunity to choose which families will be enrolled, the schools prefer families that are committed with the school. When the school opens a new enrollment slot, Rose says "[we] only accept [students] when parents made a perfect interview, as well as parents very committed with their children, and it truly feels that way, because when students want to move to another school, or alumni, because that happen a lot to us, they return." She notes that when a student decides to move to another school, usually they move back "I left in eight grade, because I wanted to go to another school, I tried during the first years of high school, but then please I want to come back next year [...] I should not have left this school." She talks about a student that went to another school for a year, and then decided to came back after a bad experience in the other school.

Aria also talks about the process of selecting new students, she states "at the end the criterion is not their academic background, what is important is that the family says they are going to commit, that is what matters, like the family support." She mentions the importance of having a family that is fully committed to support the students, even if they do not have the knowledge required by the school.

Indirectly, teachers note that the lack of parental involvement means that students can not have high academic achievement. Meanwhile, when parents who are involved in the

educational process, students tend to have better results. Teachers are able to perceive when the family is involved in the student's academic life, and that shows in different instances through the school year.

Motivation

When motivation to learn does not come from the students, it is important that it comes from the family. Two teachers mention that family motivation can affect students' academic achievement. Carol says "there are children that socially have less motivation" Then she talks about the role of the family; "[they have to] give them more than motivation, they give them the initial tools so they can look for their own path, I know that not everyone is good at mathematics or that everyone is good at reading, but if you give them support, regardless of their grades and do not say 'you have the minimum requirement to pass, you are mediocre.' In the sense that someone is supporting him by saying 'maybe next time you can do better, you can have a better outcome, maybe not the best, but something that suits you.' And not giving them a numerical incentive, but to acquire different knowledge and skills." She believes that motivation is assisting the students to continue to desire to learn, and not punish them if they do not perform good.

Nellie talks about how motivation starts at home and how it is reflected at school. "At school we only provide tools [for the students], but the motivation itself starts at home, it shows in their personal presentation, in their vocabulary, in the presence of their own family when a teacher asks for meetings, then as a teacher tells you that there is a worried family." She highlights the importance of motivation in students' achievements, and she

goes further in saying that the school can only provide the necessary tools for students' success. Thus, the school is even providing the tools to the students, family also plays an important role in their achievement by giving them motivation and support.

Socioeconomic Status

When the teachers are asked about socioeconomic status, only three of them identified family socioeconomic status (SES) as a variable affecting academic students' achievement. Elias states "I believe that a person that lives in La Dehesa [1] and has resources, has better options than a person that lives in Maipu." When asked if he believes that is true for school with the same type he says "Totally." Additionally, he believes that SES is influencing students' achievement, and he also believes that location is important. For example, a student from a private school in La Dehesa will have better academic achievement than a student who comes from Maipu [2].

Some teachers describe the schools where they work as high in academic achievement, and can be associated with the fact that parents chose that school, as they mention. Asking the teachers about why they think parents chose the school in where they work it was an indirect way to ask them about what parents consider important for their child education. If the school was described as high academic achieving and the teachers mention that the parents chose that school for its high academic achievement (and come from a SES that is able to actively choose school) it can be considered that SES can influence academic

[1] La Dehesa is not a Municipality, is a neighborhood located in Lo Barnechea.

[2] La Dehesa is a high SES neighborhood, meanwhile Maipú is medium-low SES.

achievement.

Malia, a teacher from a private school says "because it is a well off school, therefore I have students that come from La Dehesa [...], and there are ones that lives close to the school in Vitacura, and others that live in Las Condes. [3]" This is a school in which the students have high academic achievement, and Malia describes "the school has been organizing their work, and nowadays I feel that we are pioneers, because we started training five years ago, and up to this year we are one of the only schools that are starting VESS teaching strategy." She described the school as a pioneer, and looking at SIMCE scores, it has higher scores than other schools with the same SES.

When Filip describes the families from his school, he says "[The families are] catholic, I don't know if Marians[4], because spirituality is Marian, but it has always been like that. [The families are also] wealthy, and rather traditional."This particular school also has higher academic achievement compared to other schools with the same SES, "I find that academic achievement is very high, especially in mathematics, we are always in the 90th percentile at the national and private level."

Teachers did not mention SES as frequent as other factors or variables. Only teachers working in private schools were able to recognize indirectly the importance of SES. However, after the initial Ordinary Simple Linear Regression (OLS) for developing the interviews I was able to identify SES as an important component in students' academic achievement, but teachers do not think of SES as an important factor affecting the vari-

[3]Vitacura and Las Condes are high SES Municipalities

[4]Marian is a congregation within Catholic religion.

ance in students' academic achievement.

6.2 Students Variables

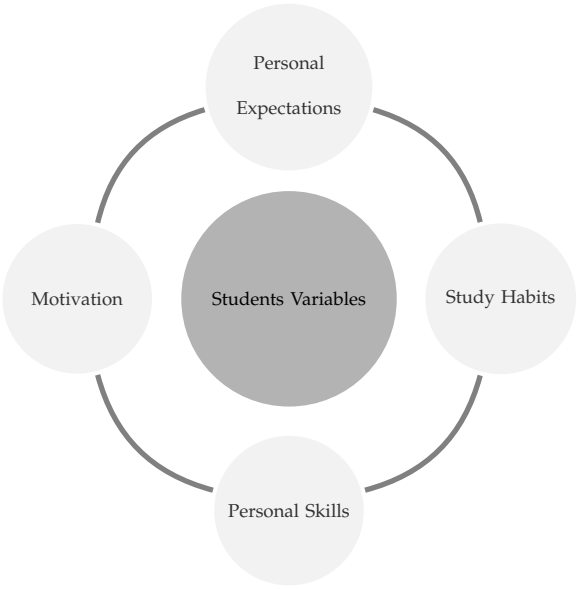

Figure 6.4: *Four sub-dimensions for student variables.*

Figure 6.4 show the variables identified by teachers in students' dimension of academic achievement. Teachers recognize the importance of students' involvement in their own learning process. Consequentially, if students are not involved in their educational process the results could be devastating for them. It is important for teachers to recognize the variables that influence students academic achievement that are related to each individual student. Every student is different, and teachers need recognize how they can help each student to succeed academically, regardless of other factors.

Twelve teachers identified at least one factor regarding the student dimension that is affecting academic achievement. However, it can not be only students responsibility to success academically, they need support from other dimensions, even if they have the

appropriate tools, it is important to remember that they are high school students who are looking to thrive academically.

Participant	Variable 1	Variable 2	Variable 3	Variable 4
Derek				
Rose				Study Habits
Aria				
Grace	Personal Expectations		Skills	
Vera	Personal Expectations			Study Habits
Filip	Personal Expectations			
Penny				
Jack				
Callie				Study Habits
Malia			Skills	
Carol		Motivation		
Molly				
Justin	Personal Expectations	Motivation		Study Habits
Axel				
Nellie				
Vesper				
Jace		Motivation		
Elias				
Tori			Skills	

Table 6.2: *Codes for students variables identified by the teachers.*

Personal Expectations

Every student has their own expectations for themselves in the near future. Their expectations are an important part of their development and learning process. When family and personal expectations are high, it could help in increasing academic achievement. However, those expectations could be different depending on school type; elite schools set higher expectations for their students, meanwhile low-income schools do not have the same opportunities. Helping students to have higher expectations could led to an

improvement in their academic achievement.

Teachers play an important role in helping students to set their own expectations. Grace says "if students are lost, or if they likes a lot of things, the role of teachers, specially the head teachers, is to help them in the process of developing their 'life project', so they see where they want to go." Helping students in finding and developing their personal motivation and raising their expectations could increase their achievement.

Vera works in a low-performance school, she says "I think that concerning expectations, students have here low expectations for themselves, and they are also very at ease, this is what I see in here." She talks about how students in her school have very low personal expectations, and that they feel comfortable with it. This means that at the end of their studies, they do not succeed academically, which is reflected in their low scores in SIMCE.

On the other hand, when students have an example from their parents to continue their education, they want the same for themselves. Elias mentions that "if they see that their parents are professionals they will also expect to be professionals, if the parents talk about the PSU, students will try to have higher scores." Both teachers talk about how academic achievements are influenced by students' own expectations, and this helps them to have higher expectations which can help them to increase their learning.

When teacher have worked in more than one school, they compare to see in which parameters the schools are different from each other. Filip has worked in more than one school, and he says "[students here] have higher goals than any other kid, they not only want to finish a degree, but to graduate from the best universities. Additionally, they

look to study abroad; most of them seek that." He talks about how students' aspirations are high in his school and students see themselves studying abroad for a Master's or Doctorate degree. Additionally, Justin states "what I saw a lot was that students have different goals [depending on the type of the school], both groups of students wanted to study at a university, but students [in the private school] were thinking where they will continue their education [after finishing their degree] students here [in the private-subsidized school] first want to study in a university, their parents want them study at the university level."

Motivation

Generating motivation in students is fundamental to develop the desire to learn. When students are motivated to learn, the teaching-learning process is facilitated, and the consequences can bring an increase in students' academic achievement. Some teachers think the main objective should be motivate students in the classroom, meanwhile others think that students' personal motivation is what increases academic achievement.

When students are motivated they feel comfortable within the school, helping them to have a sense of belonging. Carol states that "in the sense that students feel comfortable at school, they will perform better. Students create a connection with the curriculum, and they start to motivate themselves." Looking to motivate students in an important goal for Carol. She believes the ultimate objective of the school should be to have motivated students.

Teachers also believe that personal motivation is one of the most important factors for

high academic achievements. Justin mentions, "I believe that first of all, it is personal motivation that is fundamental. Here students who manages to capture what he wants to do with his life [...] will work regardless of the [quality of the] teachers inside of the classroom." He also believes that when there is a highly motivated student in classroom, teachers' factors are not relevant for a student's high achievements.

When students are exposed to different learning techniques, it is easier for them to stay motivated in school. When Jace is asked about the teaching methodologies that he uses, this dialogue occurred:

> *Interviewer: Do you have a method that might highly motivates your students?*
> Jace: Yes, they do. It is in that way of learning that SIMCE is not related to their overall learning, however it also helps them to perform higher in SIMCE.

Jace specifically notes the way that the teachers instruct generates motivation to learn in their students. Even if teachers use different methodologies to teach, for example, developing robots by creatively applying knowledge, the end goal is the students' acquisition of knowledge through the learning experience.

Personal Skills

Teachers talk about personal skills, and how students' individual characteristics can help them to having high academic achievement. When there is a brilliant student, school characteristics do not impact the student as much as they impact students with other characteristics. Tori states, "we as a school still have students that are fantastic, but that has a lot to do with personal characteristics rather than with the school environment." It

is important to highlight that Tori works in a private school. Students from this private school start with advantages that students from public schools do not have. Malia also talks about how personal skills are an important factor in academic performance, "the skills of each student [are important for academic achievement]."

Every student has different abilities, and teachers are aware that those abilities affect how they perform in different subjects. Grace mentions "[students' achievements are related] to what they like, their hobbies, their skills [...] their academic achievements also have to do with how comfortable they are with what they are doing." Not everyone has the same abilities, and within the classroom environment teachers have to be able to recognize each student's unique abilities.

All teachers need to work with both types of students, those who do not have the necessary skills to achieve high grades, and help them to find their motivation. And also the students that are naturally inclined, and do not need a lot of help to succeed academically. Being aware on how different skills can help in having higher academic achievements is the first step in developing an inclusive classroom environment.

Study Habits

In it important to emphasize that the role of the teachers goes beyond teaching and generating knowledge in students. Teachers are sometimes more responsible than parents for creating healthy study habits for students. When a student has study habits, it is reflected in higher grades. Teachers know the importance of having strong study habits for success, and they try to demonstrate these study skills to the students.

Rose is aware of the importance of having clear rules in the school environment, and having teachers working together to generate study habits in their students, "I think our team of teachers in high school is super cohesive, so we all are on the same side, and that is very important. If we all said that this is the calendar for evaluations, and no test will be changed, no teacher will change the date of an evaluation, and at the end of the day that creates discipline for the deadlines. Therefore, students will develop [good] study habits, and all of it results in students have better grades." Teachers show consistency to the students by creating and respecting their own calendar of evaluations, thus will help the students develop good study habits to succeed academically.

Teaching students the tools needed to create healthy study habits is one of the goals for Justin. He states "I tried to convince the students that they are ultimately responsible for their actions and have to assume its consequences in that regard. As a head teacher, with my course especially, I always work three aspects. The first year I work with them on these habits: study routine and study techniques; I provide them with those tools." It is important that students develop good study routines to have good academic performance. Also giving students the tools at early years could help them to use the skills throughout all of their high school education.

Poor study habits are associated with low academic performance. Vera describes how students in her school do not have good study habits. "I see a minimum effort, I see that they study just before the test; the day before." Study habits in her school are not well developed in the students and that is reflected in poor performance in various tests; either SIMCE or another tests administered by the school. Callie also describes her school

as students having poor study habits. "Students in this school [...] do not have good study habits. Students do not have eagerness to learn, they want to learn only what is needed for the test [...] The academic achievement of students is related to work the students do." If students do not have good study habits, that will be reflected in the school test scores.[5]

6.3 Teacher Variables

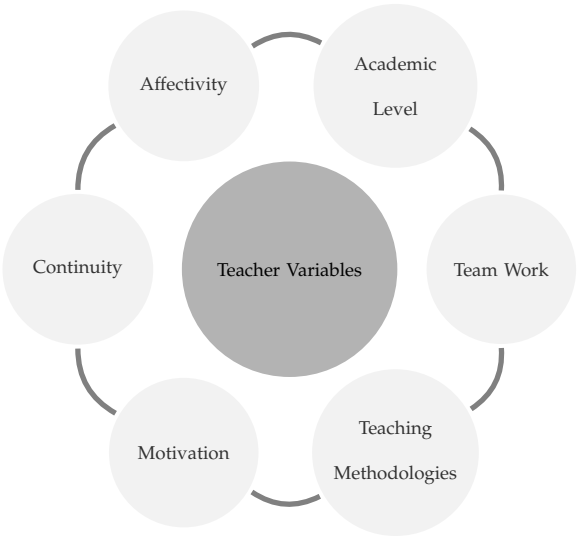

Figure 6.5: *Six sub-dimensions for the teacher variables.*

Figure 6.5 shows factors mentioned by teachers corresponding to the teacher dimension. When teachers are asked about factors influencing students' academic achievement, they recognize factors associated specifically with teachers' characteristics, and different methodologies used within the classroom environment. During the interviews, teachers identified six sub-dimensions associated with themselves. Derek states "at the teacher level, there is also a responsibility of each one of us as teachers. I have been at this school for a short time, but in my relationships with the students, they have been learning things,

[5]SIMCE does not report individual scores.

they have been deepening the complexity of their knowledge." His role has been to help the students in improving their learning.

It is important to highlight that teachers in general mention more factors related with themselves rather than with the school as an institution. When Jace is asked about teachers' role in his school, this dialogue ensued:

> *Interviewer: Are the teachers the ones that encourage the students?*
>
> Jace: Yes, they are. For example, there is a language teacher that also teaches at language workshop; before her, the workshop was very boring for the students, but now they think that it is extraordinary, because the teacher sees the language in a different way [...] and the students enjoy the language workshop. They learn more; it is fun for them.
>
> *Interviewer: Do they have a learning methodology that motivates them to learn more?*
>
> Jace: Yes, they do. And that methodology of learning is not linked to SIMCE, but at the same time it is also useful for SIMCE.
>
> *Interviewer: Are the teachers still teaching the curriculum but in a different way?*
>
> Jace: In a different way, and the students like it. It is the same with the robotic workshop [...]

In this interview section Jace talks about the role of the teachers in the learning process. His school does not focus on SIMCE scores, rather it is focused in students' learning outcomes. That does not mean that they do not focus on the national curriculum, students learn throughout different workshops by applying their knowledge.

Participant	Variable 1	Variable 2	Variable 3	Variable 4	Variable 5	Variable 6
Derek		Affectivity				
Rose				Motivation		Team Work
Aria						
Grace						
Vera						
Filip	Academic Level					
Penny				Motivation		Team Work
Jack						
Callie						
Malia					Teaching Methodology	
Carol						
Molly		Affectivity	Continuity		Teaching Methodology	
Justin					Teaching Methodology	
Axel		Affectivity	Continuity		Teaching Methodology	Team Work
Nellie		Affectivity		Motivation		
Vesper	Academic Level				Teaching Methodology	
Jace	Academic Level				Teaching Methodology	
Elias		Affectivity			Teaching Methodology	
Tori						

Table 6.3: *Codes for teacher variables identified by the teachers.*

Academic Level

Looking at specific factors of teacher sub-dimension, one is teachers' academic level. In general, when teachers are prepared in their specific subject matter and pedagogy, they can provide tools for the students to improve their learning. They are able to teach different topics in differentiated ways to provide better understanding for all students.

When teachers have a higher degrees academically, students can benefit by improving their learning. Filip states, "I also believe that the teachers that students have are good, I don't say it only on my behalf, it is for my colleagues, we all have high academic level degrees, we are constantly forced to innovate our teaching practices." If teachers are not prepared academically to constantly change and innovate their own practices, students are forced to learn in the same way, leaving behind disadvantaged students that learn or acquired knowledge differently from their peers.

Vesper also talks about how teachers are an important factor in students' academic achievement. She mentions "I think [academic achievement] is related to the way thing are done here pedagogically. I could tell you that compared to other schools, here the curriculum is utilized in greater depth." In order to address the curriculum more fully, teachers have to be academically prepared, both in curricular content and in pedagogical practices.

Teachers can also use different approaches to teach, and to use these various approaches, they must be academically prepared. Jace says, "[as teachers] we do not answer questions, we ask questions to the students, and those questions generate challenges, which visualize something. Then you give them a problem and they read it, talk about it,

and when they have an answer, or want something, or have doubts, they ask me, and one plans thinking what doubts they may have, what are the strategies they can use to solve the problem." He talks about the importance of assisting students in generating questions, then they can discover what the best strategies are to solve mathematical problems.

Academic training for teachers who want to innovate, teach the national curriculum more profoundly, or use different methodologies to teach, has to be adequate for improving the standards. They have to be prepared to change constantly, and to adapt their styles to different classroom environments. Teachers recognize the importance of their own preparation, to improve student academic achievement.

Affectivity

The relationship between students and teachers can influence how they perform academically. Teachers not only have the responsibility to teach, but also students learning process is influenced by the relationship build with their teachers. When teachers show that they care about their students, it can positively affect how students learn, and therefore how they perform on standardized tests.

Among the variables mentioned by Molly, she states "first [students' academic achievement] is related with the affectivity they have with the teacher. I believe that affectivity works, which is a very important variable." She believes affectivity is the most important factor when it comes to measuring students' academic achievement. This can positively influence how students learn and perform.

Derek is one teacher that mentions the importance of affectivity, he states, "[...] the

level of complexity required doing something so that the students can have high scores requires a team that can take care of it. At this moment we do not have it, what we have is a lot of teachers with a giant heart [...] and the students love us very much [...] I think that the quality of the teachers who are here is very good, any of the teachers who are teaching here can go anywhere else and would feel comfortable, after what we face every day." He highlights the importance of having teachers concerned about students when they come from environments with disadvantages.

Having concern for students is another way to show students affectivity. Axel mentions "we also concentrate more [on care for students] than on academic performance, we care about how they are. We have very good communication between students and teachers." His school is well know as one of the best public schools in Santiago, but the school is among the best for reasons beyond just academic performance. Teachers working there also express concern for their own students, and have good communication with their students which could be another aspect which helps in maintaining their academic excellence.

Nellie highlights that in her school, teachers have good relationship with their students, she says "The speech of the teachers is very friendly, very kind, and the relationship with the teachers is like that. One thing that is remarkable is that students still believe us, they still approach you and greet you kindly, being that it is a school in a very vulnerable sector, the students feel that affection; they feel the commitment." When the students feel a commitment from their teachers, they also tend to show commitment to their own learning, and therefore it can help them in improving their academic performance. A

good relationship between teachers and students could generate motivation in learning.

When talking with Elias, he says that relationships with the students has to be build with trust. Students trust teachers, and when they recognize their own shortcomings they ask for help. He says:

> Elias: I also believe that the relationship has to be based on trust with the students, and especially in mathematics, which is an challenging area, you have to try to have connections with them.
>
> *Interviewer: Do you believe that the relationship between teachers and students could help them to have better academic achievements?*
>
> Elias: Yes, it is vital. Because there is honesty. For example, there are students in their last year of high school that say they do no know the multiplication tables, then if there is no trust, a students will not say that.

Continuity

When teachers develop strong relationships with their students, as mentioned before, it can help to improve students' academic achievement. Accordingly to two teachers, that relationship should also last over extended time. Molly states "[students' academic achievements] are related with the permanence of the teacher throughout the years; if I teach one year, and the next one there is other teacher with that course, and the following year is another teacher, the course will not do as well as if there was a continuity of the teacher within the class." Ideally, a teacher who starts with a cohort in the first-year of high school, will continue through the whole high school mathematics curriculum.

Following the same idea Axel says, "there are a lot of dedicated teachers, they have been here for a long time, I think that is very positive." It is important to have teachers who remain in the same school for several years. Their consistency at the school could help them develop best practices for the context in which they work.

Motivation

Motivation associated to teachers can be in two forms. The first form is a teacher motivating students directly by providing the motivation that they could lack from their families. The second form is a teacher staying motivated to make the students perform better at SIMCE specifically.

First, the teachers who are looking to increase students' motivation work towards improving the learning process not just the end result. Rose is one teacher looking at long term goals, she states "at least I work hard with them through emotional parts, in the sense that they can do it [...] at the end it makes them feel confident in doing it, and that is what we as teachers have been working on with them, and it is also how students have improved a lot." She highlights the importance of the work that teachers do when they positively reinforce students; students can keep their own motivation, and feel that they can really learn.

Motivation can come from the teachers and also from the school. Nellie states "I feel that [students' academic achievements] are related with the motivation that teachers give to them, and that the school also gives motivations, the issue is that the system also mitigate students' motivation." Being able to provide motivation to students is important for

them to succeed academically, however the system does not necessarily help in motivating them.

There are teachers who motivate students to achieve higher scores in SIMCE specifically. It is a problem within the system that some students do not take the test seriously, since for them it has no consequences. Vera states "children know perfectly well that SIMCE has no [impact on their] grade [for them], they know that it does not affect them at all, therefore we have seen generations that answer it randomly, or do not answer, I remember that there was a cohort that agreed not to answer a certain SIMCE." This has led teachers to have to motivate students to even take the test in order to receive scores.

Penny talks specifically about how teachers give the students motivational speeches to obtain higher scores in SIMCE. She says "In our school, I think that clearly the motivation [is done by] us, every time we have to give the SIMCE, on the day of the SIMCE we bring the students together in the schoolyard, those who have to take the SIMCE, and we give them a motivational speech, the teachers that are in charge of the subjects." In this example, the responsibility of motivating the students to take the test seriously and earn high scores is placed on the teachers.

Motivation that teachers provide to the students is important, especially the day they have to take the test. Malia states "when we have the SIMCE, I almost take out handkerchiefs, pompoms and motivate students by [telling them to] try to give their best effort." She talks about how consciously the teachers work to motivate students to achieve higher scores on SIMCE, even if the scores are meaningless for the students.

Teaching Methodologies

The learning process is different for every student; what works for one class will not necessarily work for the next class. It is important that teachers are able to adapt to different learning styles within the same school, and more specifically within the same classroom. Looking at the sub-dimensions created by the teachers, teaching methodologies is the most mentioned across the teachers.

When Malia was asked about what factors she believe influence students' academic achievement, she states "[Students' achievements are related] with teaching strategies, anyway, that is, discarding the abilities of each student, teaching methodologies have changed a lot and rapidly." Teachers are constantly changing accordingly to what the educational system requires. Students' necessities are also changing continually, and it is important for the teachers to acquire new abilities to develop lessons that are aligned to what the system is requiring.

The way students learn in changing day to day, therefore teachers are also changing teaching methodologies. Molly says ""[Students academic achievement] has to do with the possibilities offered by the school in their workshops related to the subject. It has to do with how the teacher manages his own subject [by using] innovative methodologies for the content, the use of concrete material, the use of the graphic method, the use of TICs (Tecnologías de Información y Cominicación or Information and Communication Technologies) in relation with the subject."She is not the only one who notices the importance of teaching methodologies, Justin mentions, "what the teacher [presents, there] has to be a lesson that is challenging for the students, that is something new. It will also allow the

students to stay interested and improve the achievements proposed by the teacher"

Jace mentions how teachers' academic level can improve students' achievement, but he also states how important is to learn new teaching methodologies to improve the learning process for the students. Jace says, "[as teachers] we do not answer questions. We ask questions to the students, and those questions generate a challenge, which [lead the students to] visualize something. Then you give them a problem and they read it, talk about it, and when they have an answer, or want something, or have doubts, they ask me, and [the teacher] plans, thinking about what doubts [the students] may have, what the strategies are that they can use to solve the problem." Being able to conduct school workshops requires that teachers innovate their pedagogical practices, and adapt them to the needs of their students. Vesper also mentions "I think [students' achievement] are related to the way things are done pedagogically here"

Developing school workshops is not an easy task for the teachers; they have to be constantly learning. However, the effort they make is rewarding for the students:

> *Interviewer: Do you think that when students begin to have school workshops, they acquire another level of learning, as their level of learning rises?*
>
> Elias: Yes, of course.
>
> *Interviewer: Can that help them?*
>
> Elias: Yes, it can. Especially when they enter the university to experience what you told them, the theoretical things, it helps them. They also apply their learning, not only on the board, because the board is already a grade, they study for a grade, however, if they [work] as a group, they learn to share, to

live, one through such material, another through solar panels, another through cables, another from the soldering iron, and they live [the learning process]. They take it into practice, I find it great, but I am telling you, this is because we have the resources, doing a solar car is not cheap.""

Elias talks about how school workshops are fundamental in applying theoretical knowledge into their lives, to make the learning process meaningful for them. When students are able to learn by doing, they can develop a deeper understanding of the content, which can also lead to higher academic achievement.

Different didactic strategies can help students to apply their theoretical knowledge in different areas. Some schools highlight the advantages of this strategy. Axel states, "I think that [students' academic achievement] has to do with the didactics that can be used. Last year, eight grade students made a modality of debate in history, that is, they discussed the different types of states that Europe had for a period, but they were discussing it. Then there was a group that was discussing the French monarchy, and another the Spanish monarchy. It was not the traditional teaching strategy, using a document, or reading, meanwhile it was about participation. It shows that the teachers in general are committed to classes in where the students are actively participating, or instances where the student is more present, and I believe that the students stay in that modality, and we as teachers know that this dynamic makes the students flow differently."

Team Work

Teachers should work as a team, regardless of their specialization. Working collaboratively can develop a well-rounded education, integrating knowledge from various areas.

> *Interviewer: Do you think that working collaboratively helps students to have better academic achievement?*
>
> Axel: Yes, of course. Because students have better relationship with some teachers and basically the changes in their behavior can have an impact on them. Basically, it has to do with discussing the beginning of the issue. In summary, teachers practices have consequences, and if a teacher does not observe it, because the teacher may not notice the issue, or there is no [other teacher] present to talk about it. Therefore, team work obviously makes the teacher changes their practice, and change in a positive sense.

When teachers work together as a team, they can have shared goals to achieve within the school setting. Teachers working for the same goal help students in having a structure to rely on, "the increase in students' academic achievement in the past years, specially since the change of structure in the school, it is mainly related to the teamwork that has been developed with all the teachers," states Rose. It is important that the school supports those practices, however that is not the case in every school. Some of them do not provide opportunities for the teachers to work collaboratively.

Even when there are benefits from working as a team there are schools that do not support it. Penny mentions "it comes from our own initiative, I work together with other

science teachers, we work [to intertwine] SIMCE and PSU with biology and chemistry, we have the same rules. There are three verbal teachers and they work as a team also, in history it is the same, but it is something coming from us, it is not like the school giving us the space [to work as a team.]" The school does not give the instruction or time for teachers to work together, but in spite of that, teachers work as a team, and that is reflected in students' achievement, even with the problems the students have. Following the same idea, Penny says "it is hard to work as a team, but despite all the problems we have with the students, all the shortcomings they have, we achieve many things with them, considering that all of that the scores we have are quite good."

6.4 School Variables

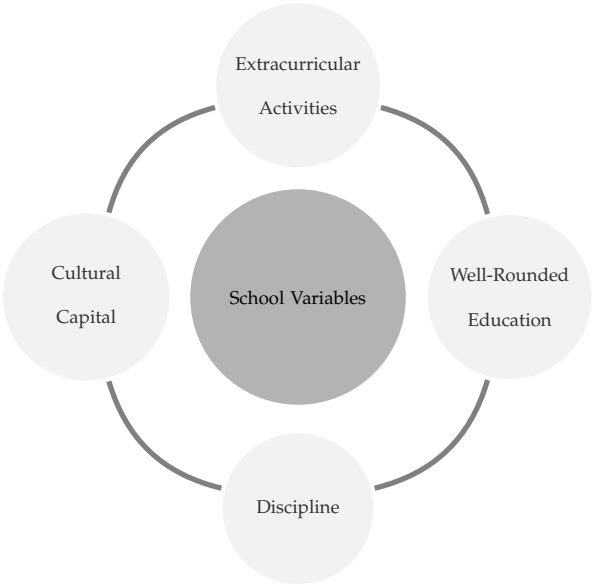

Figure 6.6: *Four sub-dimensions for the school variables.*

Figure 6.6 presents school dimensions that affect student academic achievement. Looking at the factors or variables associated with school environment, teachers mention them

less often than family dimension. Derek is one of the teachers that talks about school as an institution, he states "there is an influence [...] of the school, but depending on how it is structured, it can also generate a consequence to the students." He talks about the school as an institution and how it can have consequences on students' achievement.

Compared with family variables, teachers did not mention school factors as often. However, there are teachers who mention the importance of the school in the academic achievements of students. Carol, a teacher from a public school, mentions "when the school provides a well-rounded education it can supply all the deficiencies that a students can have emotionally, personally, or familiarly, and when they start to feel comfortable in the school, they will do better." She is one of the few teachers that believes the school system can supply what the family can not deliver.

It is important to highlight that generally school factors as an important factor on student achievement are least mentioned by the teachers. Out of a total of 19 teachers, 11 mentioned the school as a sub-dimension, and the variables identified by the teachers were mentioned less frequently than the family sub-dimension.

Cultural Capital

In the family sub-dimension, teachers mention how family cultural capital can affect students' academic achievement. As mentioned before, in the short term, increasing cultural capital is not easy, but some schools explicitly state the importance of providing the tools for their students to increase their cultural capital by providing them with skills, knowledge, and credentials to be part of a social environment.

Participant	Variable 1	Variable 2	Variable 3	Variable 4
Derek	School			
Rose				
Aria	Cultural Capital			
Grace				Well-Rounded Education
Vera				
Filip				
Penny				
Jack	Cultural Capital			Well-Rounded Education
Callie				
Malia				
Carol		Discipline & Order		Well-Rounded Education
Molly				
Justin				Well-Rounded Education
Axel			Extracurricular Activities	
Nellie				
Vesper				
Jace			Extracurricular Activities	
Elias		Discipline & Order	Extracurricular Activities	Well-Rounded Education
Tori				

Table 6.4: *Codes for school variables identified by the teachers.*

Schools per se are social environments, therefore they have an associated capital cultural, which sometimes can be similar as family cultural capital. However, there are schools that specifically work on increasing students' cultural capital. Jack works in a school that prepare students culturally. "We try to train culturally prepared students and that is why the teachers are trained to be multifaceted, who not only know about their area of expertise [...] they also know knowledge from different cultural areas, [they are] a wise person, in the old meaning of the word." He indirectly relates high student aca-

demic achievement from his school to what the school looks for in the students. Students from his school are taught to have high cultural knowledge, who generally increase their cultural capital throughout their schooling at this school.

When Aria talks about cultural capital, she states "the school has its history, has formed two Presidents. These students are told that they are going to be the leaders of tomorrow, and a leader of tomorrow cannot be someone who does not have knowledge, or who is uncultured." The school explicitly says the students who graduate from this school have high cultural capital. Thus, the school environment helps the students in developing different areas of knowledge, and providing them with the needed tools achieve higher social status.

Discipline & Order

Among the factors that may affect students' academic achievement, the interviewed teachers mention discipline and order of the school. Thus, if a school is well organized, and provides students with discipline, it could help them to increase their academic achievement.

Molly talks about how discipline can influence academic achievement in saying" [academic achievement] is related with discipline, how discipline is taken care of at school, and how students' safety is also taken care of at school." First, the school needs to discipline their students, and second, it is important that the school also takes care of maintaining the discipline among students. The role of the school is also to provide a safe environment for the students by disciplining them."

When talking about the factors influencing students' achievement with Elias, he first mention family as a factor. Then, when asked about if there is any school factor, this exchange took place:

> *Interviewer: Do you think there is any factor influencing within the school [students' academic achievements?]*
>
> Elias: In academic results yes. As I said, it is a well-planned, well-organized school, it does not improvise as in other schools, and they care about the cognitive aspect.

Elias highlight the importance of organization and planning to improve academic achievement.

Extracurricular Activities

It is essential to understand how extracurricular activities play an important role in education. It can help students in developing different areas of interest which are not included in the national curriculum, giving them the opportunity to develop different skills. Those skill are generally not measured by standardized tests, however, but some of them will require being able to apply curricular knowledge into different domains.

Vesper talks about the importance of providing tools to justify their opinions to give the students critical thinking skills. She says "there are always interactions with them [the students], they always have to justify what they say, an opinion that does not have a foundation is never accepted, it is discussed, they question each other, therefore there is a critical capacity that is built and they can develop quite well; they develop skills that are

important." She speaks about the general skills that are not included in the curriculum, which are also important for developing academic achievement. Those skills could help the students to increase their academic achievement without being developed specifically for that purpose.

Elias mentions how his school is looking for adding more extracurricular activities to help students to apply their knowledge "we [as a school] deliver good scores in SIMCE and PSU, the school where I am now offers good infrastructure, for example next year it is changing the focus, we will have robotic and nuclear physics workshops; other tools, more practical, the school is looking for it, not to be so theoretical, because what the school is realizing is that we are killing the students with the classic educational system." He knows that the regular curriculum provides knowledge to the students, but they also need to apply theoretical knowledge into practical situations like workshops.

In one of the schools, the principal looks at the students' achievements not only by looking at SIMCE scores. Jace says "the principal was very happy, because I have a robotic workshop, and in the last few weeks teachers have come from other schools, with students from other schools to see what we are doing, because they want to do a project, buy their own robots, and for the principal this is an achievement." He highlight how the principal gives importance to not only SIMCE scores to measure academic achievement, but he looks at workshops that helps students' development in different areas.

Well-Rounded Education

The school as an institution that can influence how teachers develop their classes. It can provide tools for the teachers to work together or independently. A well-rounded education can help students to develop interests in other areas, and to integrate knowledge into different domains. For example, a school whose incentive is a well-rounded education will integrate mathematics into history, or history into physics, which can help the students to apply their knowledge.

Grace works in a school which appreciates differences in students' knowledge. She says "[this school] absolutely values diversity, not only in terms of learning, but also in terms of well-rounded development of students; therefore, academic achievement is not measured, they are not based on what we traditionally see reflected in a grade, but it has to do with the development of each student as a whole [...] If I look at it as an evaluation within the educational process in the school, I think [academic achievement] is high, the children are very satisfied with their learning, and with their construction of themselves as human beings when they leave school." The school evaluate the process of learning not only with grades, they also use different learning scales; they focus on forming well-rounded people.

When Jack is asked about well-rounded education, he states "here, we use the word integration in the sense that we understand knowledge as an unparalleled thing, it is an holistic understanding, more integrated; therefore we do activities that are called integration, where each class section, in a democratic process, discussion, reflection, choose a topic [...] so we take a topic and focus on it with the different teachers and working

groups." He highlights the importance of students working with other teachers, thus students' learning process is well rounded. Connecting the different areas of knowledge give the students a varied point of view, and that could help them to increase their academic achievement, even if the school is not working directly towards academic achievement as the end goal.

A teacher from a public school, Carol, mentions "[students' academic achievement is related] to a well-rounded work, because, first they are students that neither socially nor economically are motivated, then when the school does a well-rounded work, the school supplies resources for all the deficiencies that students can have." When students come from socially disadvantage situations a well-rounded education can help to supplement those shortcomings, and improve their academic achievement.

The importance of applying theoretical knowledge can help students to develop their knowledge and skills. For example, Justin says "in October we will go with a group of students [to do outside activities]: one group will go for one day, another for two days, and others for three days. This is looking for an application into different areas: mathematics, biology, physics, and technology are mixed, all in the same way, so students can see the integration, and it is clear that it will cause a better development. If a verbal teacher add something, a graph, an interpretation of a mathematical graph, allows to develop better writing skills, but I am also seeing that mathematics is applicable everywhere. I think we have to show it more frequently so students can develop better academically." He emphasize that the school has been working on developing a well-rounded curriculum, and that has helped them to increase their standardized test scores consistently.

CHAPTER 7

Exploring Teacher Interviews using the SIMCE Database

This chapter analyzes the sub-dimensions developed from teachers interviews on students' academic achievement measured using the SIMCE test scores from 2016. The goal is to determine if the sub-dimensions identified by teachers predict students' academic achievement, or if those sub-dimensions do not have a significant effect on them, leading teachers to have inconsistent conclusions about students' academic development. Additionally, it is important for teachers to understand how to provide equal opportunities inside the classroom for all students. The sub-dimension identified by the teachers were built using the results from questionnaire administered to students, teachers and parents. This chapter seeks to answer the question: What statistically significant variables are influencing students' academic achievement measured by using the SIMCE test scores? Sub-dimensions that had less than six questions, the questions were treated as independent variables directly. However, if the sub-dimension had six or more questions it was reduced using a factor analysis to produce a reduced number of items to add into the regression models, as explained previously in chapter 5.

The analysis was made in two stages: first results come from Simple Linear Regressions (SLR) if there is only one question used for that sub-dimension, and Multiple Linear

Regressions (MLR) if more than one question was used for each sub-dimension identified using teacher interviews to determine if the predictors named by them have a significant effect in variance change in mathematics scores. Given the large sample size, the p_{values} were significant, even when the change in variance explained was less than 1%, using R^2 value allowed to drop non significant sub-dimensions, and built a model for each dimension. A significant change in variance was defined by an R^2 greater than 1.5%, thus sub-dimensions having greater values than that were added into the multilevel analysis at each corresponding level.

This chapter presents a three level multilevel analysis: students and family (level 1), nested within the classroom (level 2), and classrooms nested within schools (level 3). This chapter is looking to answer the following questions:

1. Is the school acting as an agent of social reproduction in Chile?

2. Does the privatization and decentralization of the educational system in Chile connect to the sub-dimensions identified by teachers?

7.1 Simple Linear Regressions (SLR) and Multiple Linear Regressions (MLR)

The analysis from SLR and MLR included all sub-dimensions identified by teachers during the interviews. For this analysis, one sub-dimension was used independently from each other, meaning that the results show how much of the variance in change in mathematics scores was associated with that particular sub-dimension. Some sub-dimensions

were represented using one independent variable, and others required more than one independent variable to represent the sub-dimension created from the teacher interviews. For example, with school dimension, well-rounded education was represented using three independent variables in the model, meanwhile extracurricular activities was constructed using only one independent variable. Additionally, for sub-dimensions that were represented using six or more questions a factor analysis was conducted to reduce the number of questions.

This section will also show if the differences were significant or not when using categorical variables, by defining one reference group and comparing it with the rest of the groups created for the analysis. If differences were significant, the sub-dimension was added into its corresponding level for the multilevel model analysis. The interest here was to determine if each sub-dimension contributes more than 1.5% to the variance in SIMCE mathematics scores to be added into the multilevel analysis.

After running the initial analysis for each sub-dimension individually, a Multiple Linear Regression was run to determine how much of the variance was associated with each sub-dimension within each of the dimensions. This was done to explore individually the variables named during the teacher interviews. After this initial analysis, a Hierarchical Linear Model (HLM) at three levels was developed; the predictors added to each levels were:

- Student Level (1):
  - Parent expectations: Incomplete High School was used as a reference group.
  - Socioeconomic status: Monthly income, and mean number of years of parents

education.

  - Parental involvement: School inviting parents to participate and parents participating in activities.
  - Personal skills: Homework, do things good, learns easily, and good grades.
  - Study habits: Study more, likes studying and doing homework.

- Classroom or Teacher Level (2):
  - Affectivity: Respect, and teachers showing no respect.
  - Academic level: Having a teacher credential from a traditional university was used as a reference group.
  - Continuity: Being hired as a permanent employee was used as a reference group.

- School Level (3):
  - Cultural capital: Values, education quality, teacher relationship, and classmate relationship.
  - Discipline: Negative behavior, teachers' environment, violence and rules, assessment of behavior, and ability to solve problems.
  - Well-Rounded education: Drugs and sexuality, healthy habits, and joint decisions with the principal and administrative personnel.

The next section explores in depth the already determined significant predictors named by the teachers during the interviews, using a a Hierarchical Linear Model at three levels.

7.2 Hierarchical Linear Model (HLM)

After it was determined how much of the variance in the mathematics SIMCE scores was associated individually to each of the sub-dimensions named by teachers during the interviews, the following analysis used the values that were considered significant and were added into its respective level:

- Student Level (1): Parents expectations, socioeconomic status, parental involvement, personal skills and study habits.
- Classroom or Teacher Level (2): Respect, continuity and academic level.
- School Level (3): Discipline, cultural capital and a well-rounded education as means for the school.

The sample selected for running the HLM analysis was from teacher municipalities within the Metropolitan Region, with a total population of 47,005 students for the final analysis, nested within 1,319 classrooms, then nested within 482 schools.[1] The dependent variable was SIMCE mathematics scores, since only math teacher questionnaires were available in the database for 2016.

The first result analyzed is from the unconditional model, meaning no predictors were used to determine the percentage of variance associated to each level. Results are presented in Table 7.1, which shows the grand mean, and the percentage of variance for each level. Results indicate that 51.7% of the variance in mathematics scores is at the student

[1]Computational resource was one limitation to work with the whole sample, thus less students were used for HLM analysis.

level (σ^2), meaning that within the same classroom SIMCE mathematics scores are considerably different from one student to another. This could reflect differences between students within the same classroom related to background characteristics and teacher practices within the same school,[2] reflecting how student background characteristics had a strong effect on the variance in SIMCE mathematics scores.

The results in Table 7.1 also present the variance for SIMCE mathematics scores between classrooms, with 3.0% of the total variance corresponding to mean differences between classrooms (τ_π), indicating that within the same school, variance between classroom was considerably lower than between school variance. When classroom level is taken into account, 45.3% of the variance in SIMCE mathematics scores is from differences between schools (τ_β). The results reflect clustering at both the classroom and school levels respectively, supporting the idea that schools in Chile are segregated (Santos and Elacqua, 2016, Valenzuela et al., 2013).

Fixed Effect	St. Coefficient	St. Error	T-ratio
Mathematics			
Grand Mean, γ_{000}	280.33**	2.11	132.795
Random Effect	Variance	St. Error.	% of Variance
Mathematics			
Students, σ^2	2293.19**	17.41	51.7
Classrooms, τ_π	132.99**	10.74	3.0
Schools, τ_β	2005.81**	137.69	45.3

Table 7.1: *Three level unconditional model for predicting mathematics SIMCE scores (Model 1).* $^*p_{value} < 0.05$, $^{**}p_{value} < 0.001$

It was also examined percentage of variance separately for all municipalities in the

[2]For MLR interaction terms were created, however none revealed a significant increase in R^2 value.

sample[3] to determine if the percentages of variance were similar across all municipalities used for the final analysis. Table 7.2 shows the pattern of variances partitioned at each municipality used for the final analysis and the entire sample. When looking at the variance for each municipality the results were consistent with the variance of the entire sample[4], and reaffirm the hypothesis that on average the between-classroom variance was significantly lower than the within-classroom and between-school variances.

Percentage of Variance					
Random Effect	Entire Sample	Santiago	La Florida	Lo Barnechea	La Reina
Mathematics					
Students, σ^2	51.7	62.6	53.7	36.8	55.2
Classrooms, τ_π	3.0	4.5	1.6	0.2	2.7
Schools, τ_β	45.3	32.9	44.7	63.1	42.1
Percentage of Variance					
Random Effect	Entire Sample	Ñuñoa	Providencia	Peñalolen	Colina
Mathematics					
Students, σ^2	51.7	53.1	55.9	50.2	44.0
Classrooms, τ_π	3.0	6.6	2.6	3.5	2.2
Schools, τ_β	45.3	40.4	41.4	46.3	53.8
Percentage of Variance					
Random Effect	Entire Sample	Maipú	Vitacura	Puente Alto	
Mathematics					
Students, σ^2	51.7	57.1	77.2	53.1	
Classrooms, τ_π	3.0	3.2	0^b	6.6	
Schools, τ_β	45.3	39.7	22.8	40.4	

Table 7.2: *Three level unconditional model for predicting mathematics SIMCE scores by municipality.*
b. This parameter is set to zero because it is redundant.

[3]Ñuñoa, La Florida, Providencia, Peñalolen, Santiago, Lo Barnechea, Colina, La Reina, Maipú, Vitacura, and Punte Alto.

[4]Vitacura is not consistent with the entire sample, comparing with the rest of the country (14.40), Vitacura (0.29) has a low percentage of population below the poverty line in 2013.

Model-2

Model 2 was first tested using a smaller sample size to determined if adding random slopes were statistically significant. Thus, using a municipality with similar variance of the entire population was used for the analysis (Peñalolen $N = 2,166$). Table 7.3 shows the results of multilevel analysis using random intercepts and slopes, adding predictors at student level identified by teachers during the interviews.

The last two columns show the random slope indicating whether the student level slopes vary significantly across classrooms and schools. The results show no variability with either level, neither classroom nor schools; meaning that random slope values were not significant at the 0.05 level. This suggests that the effect of student background characteristics was consistent across classrooms and schools. In terms of the variance explained the classroom effect was zero, meaning that after controlling for student background characteristics and using random intercepts and slopes, there was no need to add predictors at the classroom level to explain the variance in the SIMCE mathematics scores.

Since results from a smaller sample showed no significant values for random slopes, the final model 2 was developed using random intercepts and fixed slopes, assuming that across classrooms the slopes did not vary significantly from the mean slope. Table 7.4 presents the results obtained from a multilevel analysis that incorporated student background characteristics as predictors at level-1 (model 2). In terms of variance explained the effects of student background characteristics (σ^2) accounted for 51.7% of the total variance in the unconditional model compared to 58.7% in model 2, meaning that schools tended to group students with similar background characteristics together, in-

Fixed Effect	St. Coefficient	St. Error	St. Slope Classroom	St. Slope School
Mathematics				
Mean SIMCE, γ_{000}	218.37**	34.40		
Parental Involvement				
School Inviting, γ_{1_100}	1.40	1.90	44.00	11.34
Participating Act., γ_{1_200}	2.13	1.87	52.54	0^b
Parents' Expectations				
Tech. Professional, γ_{2_100}	-23.31	31.47	0^b	0^b
Sci. Humanistic, γ_{2_200}	-31.04	32.35	0^b	0^b
Pro. Institute, γ_{2_300}	-22.94	30.91	0^b	0^b
University, γ_{2_400}	-1.62	30.81	0^b	0^b
Graduate, γ_{2_500}	9.30	31.09	0^b	49.43
Socioeconomic Status				
Monthly Income, γ_{3_100}	$2.93 * 10^{-6}$	$3.11 * 10^{-6}$	0^b	0^b
Mean Parent Ed., γ_{3_200}	1.68	0.66	0^b	0^b
Personal Skills				
Homework, γ_{4_100}	-0.33	1.97	0^b	11.48
Do Things Good, γ_{4_200}	10.07*	3.06	0^b	31.71
Learns Easily, γ_{4_300}	2.50	2.18	0^b	0^b
Good Grades, γ_{4_400}	-4.47*	1.90	2.85	0^b
Study Habits				
Study More, γ_{5_100}	6.57*	2.40	0^b	0^b
Like Study, γ_{5_200}	-3.95	2.37	0^b	20.77
Do Homework, γ_{5_300}	1.56	1.88	6.11	0^b
Random Effect	Variance	St. Error	% of Variance	
Mathematics				
Students, σ^2	1766.86**	94.67	71.6	
Classrooms, τ_π	0^b	0^b	-	
Schools, τ_β	701.93	447.69	28.4	

Table 7.3: *Three level conditional model using students and family characteristics as predictors at level 1 (Model 2) using a smaller sample size (Peñalolen).*
b. This parameter is set to zero because it is redundant.
*$p_{value} < 0.05$, **$p_{value} < 0.001$

creasing school segregation. Additionally, residual variance decreases from $\sigma^2 = 2,293.19$ to $\sigma^2 = 1,934.08$ which is a reduction of 15.66% from the unconditional model presented in 7.1.

Among classroom variance (τ_π) within the schools there was a decrease from 3.0% to 2.9%, meaning that after controlling for student background characteristics the percentage of variance accounted by the classroom within the same school did not vary significantly. It reflect how classrooms within the same school did not differ significantly in their average students performance in mathematics SIMCE scores. Classrooms within the same school tended to group students with similar background characteristics, reinforcing the idea that school segregation in Chile is relatively high. If the percentage of variance was equal to 0, it would mean that there was no difference between classrooms within the same school. This supports the idea that within the same school teachers tend to have similar background characteristics.

The percentage of variance in SIMCE mathematics scores that was accounted for by the school (τ_β) decreased from 45.3 in the unconditional model to 38.3 in model 2. Percentage of variance accounted among schools reflected that even after controlling for student background characteristics, the differences in SIMCE scores vary significantly. When thinking about the amount of variance explained at the student and school level it is possible to say that within the same school scores varied among students; however, schools tend to group students who have similar background characteristics, reflecting the level of segregation in the Chilean school system.

Looking at the values presented in 7.4 significant and the positive coefficients for both monthly income and mean parent education (SES), results indicate that students coming from higher SES have higher predicted mathematics SIMCE scores, which is consistent with the analysis made in the previous literature (Barr, 2015, Lucas, 2009, Pokropek et al.,

Fixed Effect	St. Coefficient	St. Error	
Mathematics			
Mean SIMCE, γ_{000}	208.14**	7.42	
Parental Involvement			
School Inviting, γ_{1_100}	0.84*	0.32	
Participating Act., γ_{1_2100}	0.14	0.32	
Parents' Expectations			
Tech. Professional, γ_{2_100}	-9.41	6.91	
Sci. Humanistic, γ_{2_200}	-11.90	7.29	
Pro. Institute, γ_{2_300}	-5.34	6.72	
University, γ_{2_400}	10.07	6.70	
Graduate, γ_{2_500}	22.44**	6.74	
Socioeconomic Status			
Monthly Income, γ_{3_100}	$3.32 * 10^{-6}$**	$7.52 * 10^{-7}$	
Mean Parent Education, γ_{3_200}	0.81**	0.14	
Personal Skills			
Homework, γ_{4_100}	-0.49	0.39	
Do Things Good, γ_{4_200}	13.43**	0.55	
Learns Easily, γ_{4_300}	6.56**	0.46	
Good Grades, γ_{4_400}	-6.12**	0.41	
Study Habits			
Study More, γ_{5_100}	4.95**	0.53	
Like Study, γ_{5_200}	-1.67**	0.43	
Do Homework, γ_{5_300}	1.56**	0.40	
Random Effect	Variance	St. Error	% of Variance
Mathematics			
Students, σ^2	1934.08**	19.77	58.7
Classrooms, τ_π	96.29**	10.96	2.9
Schools, τ_β	1261.84**	94.48	38.3

Table 7.4: *Three level conditional model using students and family characteristics as predictors at level 1 (Model 2).*
*$p_{value} < 0.05$, **$p_{value} < 0.001$

2015, Quezada-Hofflinger and von Hippel, 2017). A combination of zero years of mean parents' education, and a family income less than the minimum established by law is the minimum SES possible in this analysis[5]. For the maximum SES the values considered

[5]In March 1st 2020, the minimum wage in Chile correspond to 301,000 Chilean Pesos.

22 years of average parent education, and a monthly income seven times higher than the minimum wage. In Chile in 2019, 53.1% of the working population in Chile had a monthly income less than $400,000, and only 6.1% of have an income higher than $1,500,000[6]. Predicted mathematics SIMCE scores tend to increase as higher the SES of the parents, this reflects social inequalities reproduced inside the school system. Differences in student academic achievement should be mitigated by the school rather than reinforced by it.

Parental expectation was a categorical variable, and not finishing high school was used as a reference group. The pattern shows that when parents' expectations were higher, predicted SIMCE mathematics scores tended to increase, however the only significant difference was between those who completed high school and student finishing some graduate studies. The results are consistent with the national curriculum until second grade in high school. For technical professional schools, the national curriculum is the same until second year, the changes start in the third and fourth years, with specialization courses, which could partially explain the non-significant differences.

Using student reports for study habits and personal skills, the results showed a positive effect from doing things good, learns easily, and study more on predicted mathematics SIMCE scores. Meanwhile, when students liked to study, think that they can have good grades, and do their homework there was a negative impact on predicted scores. Results were not completely consistent with previous findings from the SLR, in where only thinking of having good grades had a negative effect in predicted SIMCE scores, however the results were consistent with the MLR where three predictors impacted negatively pre-

[6]1 USD correspond to approximately 730 Chilean Pesos

dicted scores. Finally, parental involvement, which included schools inviting parents to participate and being involved in extracurricular activities tended to increase predicted SIMCE scores, however only school invitations to parents was considered significant.

Model-3

The next model introduced predictors at the classroom-teacher level to investigate if they accounted for differences in mathematics SIMCE scores. The variance related to level-2 was considerably lower compared to level-1 and level-3 in the unconditional model. It was important to understand what predictors at the classroom-teacher level impacted mathematics scores. Table 7.5 presents the results of model-3 which incorporated classroom-teacher predictors in the previous model-2, which included only student background characteristics as predictors at level-1.

Within classroom variance (σ^2) there was an increase from 58.7% in model-2 to 61.6% in model-3. When controlling for classroom-teacher attributes, the percentage of variance accounted for students' background characteristics increased. In other words, within the same classroom, variance in mathematics SIMCE scores increased when teacher attributes were controlled. Students from different background within the same classroom tended to have a higher variance when the classroom-teacher predictor was controlled; meaning that variables at level-1 continued accounting for the largest percentage of variance among the three levels developed in this analysis.

Among classroom variance (τ_π) within the same school decreased from 96.29 in model 2 to 89.34 in model 3, representing a decrease to 7.22%, accounting for a 2.8% of the total

residual variance at level-2. This means that after adding the predictors at the classroom-teacher level, the amount of variance remained to be explained was lower compared to both of the other two levels, student and school. One of the possibilities is that there were variables at the classroom-teacher level not mentioned by the teachers during the interviews, and those potential variables could account for part of the variance at level-2; however, if teachers were not able to identify significant predictors, is the role of teachers enough to change an unequal school system? Another explanation could be that even if more variables were added at the classroom-teacher level, the reproduction within the educational system is not modifiable at the classroom-teacher level, and it should be changed at the school level to decrease intergenerational transmission of inequalities and increase the possibilities for success with the more disadvantaged students.

Among school variance (τ_β) decreased from 38.3% to 35.6%, which as the previous model demonstrated, after controlling for student and teacher variables the percentage of variance in SIMCE mathematics scores was significantly higher compared to among classroom variance. Considering that schools enroll student with similar characteristics, for example SES, the percentage of variance accounted for both student background characteristics and the school represented a higher level of segregation among schools in the Chilean educational system. In other words, within the same classroom in the same school, student scores will vary, however students' background characteristics tended to be very similar within the same school.

Fixed Effect	St. Coefficient	St. Error
Mathematics		
Student		

continued

Fixed Effect	St. Coefficient	St. Error
Mean SIMCE, γ_{000}	135.58**	13.47
Parental Involvement		
School Inviting, γ_{1_100}	0.74*	0.34
Participating Activities, γ_{1_2100}	0.21	0.34
Parents' Expectations		
Technical Professional, γ_{2_100}	-10.72	7.17
Scientific Humanistic, γ_{2_200}	-13.97	7.56
Professional Institute, γ_{2_300}	-7.10	6.96
University, γ_{2_400}	8.50	6.94
Graduate, γ_{2_500}	21.22*	6.98
Socioeconomic Status		
Monthly Income, γ_{3_100}	$2.91 * 10^{-6}$**	$7.79 * 10^{-7}$
Mean Parent Education, γ_{3_200}	0.85**	0.15
Personal Skills		
Homework, γ_{4_100}	-0.51	0.41
Do Things Good, γ_{4_200}	13.03**	0.58
Learns Easily, γ_{4_300}	6.44**	0.49
Good Grades, γ_{4_400}	-5.93**	0.43
Study Habits		
Study More, γ_{5_100}	4.90**	0.55
Like Study, γ_{5_200}	-1.56**	0.45
Do Homework, γ_{5_300}	1.38**	0.42
Classroom-Teacher		
Academic Level		
Normal School, α_{1_100}	11.12	14.83
Non-Trad University, α_{1_200}	-0.02	2.01
Professional Institute, α_{1_300}	-12.22	14.77
Student, α_{1_400}	-4.02	3.78
Other, α_{1_500}	1.26	4.78
None, α_{1_600}	0^b	-
Affectivity		
No Respect - Mean, α_{2_100}	7.86*	3.03
Respect - Mean, α_{2_200}	16.70**	2.63
Continuity		
Fixed Term, α_{3_100}	-6.34**	1.61

continued

Fixed Effect	St. Coefficient	St. Error	
Replacement, α_{3_200}	-0.03	6.80	
Invoice, α_{3_300}	-30.14	37.77	
Random Effect	Variance	St. Error	% of Variance
Mathematics			
Students, σ^2	1931.63**	20.68	61.6
Classrooms, τ_π	89.34**	11.42	2.8
Schools, τ_β	1116.97**	88.33	35.6

Table 7.5: *Three level conditional model using students and family characteristics as predictors at level 1 and classroom predictors (Model 3).*
b. This parameter is set to zero because it is redundant.
*$p_{value} < 0.05$, **$p_{value} < 0.001$

Results from Table 7.5 show that when student background characteristics were controlled, teacher' academic level was no longer significant, compared to the initial OLR model developed. Additionally, affectivity had a positive impact in predicting mathematics SIMCE scores; however, respect showed a greater increase in score than no respect. While there was a significant variation between classrooms in the model, most of it was not accounted for by classroom or teacher characteristics identified by teachers during the interviews. Additionally, continuity defined as a type of contract using permanently hired teachers as a reference group was also significant when compared to fixed term.

Model-4

The final model was developed using predictors at the school level: discipline, cultural capital and well-rounded education as means for each school in the database; additionally with predictors at student and classroom levels already added in model 3. The results are presented in Table 7.6. It is important to better understand which predictors at the school-

level were significantly affecting SIMCE scores. Is it possible that schools are acting to reproduce social inequalities rather than increasing social mobility?

Among school variance (τ_β) decreased from 1116.97 in model 3 to 453.12 in model 4, representing a decrease of 59.43%, accounting for a 18.3% of the total variance in mathematics SIMCE scores. The significant decrease in the amount of variance at the school level means that the predictors identified by the teachers during the interviews were significant for predicting SIMCE scores. It is important to highlight that among the predictors mentioned by the teachers there was not school type, which could lead to a greater decrease in the percentage of variance at the school level.

The highest variance was at student level (σ^2), representing 78.1% of the total variance in the model, increasing significantly from the previous models. Student background characteristics account for the largest percentage of variance among the three levels used for the final model. One important highlight from this analysis is that in every model presented the largest percentage of variance always corresponded to the student-level. In other words, students' characteristics are the ones that are perpetuating the social class structure in Chile.

When school characteristics were controlled, the differences among students within the same classroom slightly increased from 2.8% to 3.7%. These results support the idea that when predictors at the school-level were controlled, predictors at the classroom-teacher level did not impact SIMCE scores.

Fixed Effect	St. Coefficient	St. Error
Mathematics		
Student		

continued

Fixed Effect	St. Coefficient	St. Error	
Mean SIMCE, γ_{000}	-25.88	24.47	
Parental Involvement			
School Inviting, γ_{1_100}	0.61	0.34	
Participating Activities, γ_{1_2100}	0.34	0.32	
Parents' Expectations			
Technical Professional, γ_{2_100}	-9.41	7.25	
Scientific Humanistic, γ_{2_200}	-11.40	7.65	
Professional Institute, γ_{2_300}	-5.58	7.04	
University, γ_{2_400}	9.68	7.02	
Graduate, γ_{2_500}	22.04*	7.06	
Socioeconomic Status			
Monthly Income, γ_{3_100}	$1.77 * 10^{-6}$*	$7.92 * 10^{-7}$	
Mean Parent Education, γ_{3_200}	0.77**	0.15	
Personal Skills			
Homework, γ_{4_100}	-0.51	0.41	
Do Things Good, γ_{4_200}	13.09**	0.58	
Learns Easily, γ_{4_300}	6.43**	0.49	
Good Grades, γ_{4_400}	-5.91**	0.43	
Study Habits			
Study More, γ_{5_100}	4.94**	0.56	
Like Study, γ_{5_200}	-1.52**	0.46	
Do Homework, γ_{5_300}	1.47**	0.43	
Classroom-Teacher			
Academic Level			
Normal School, α_{1_100}	20.24	14.75	
Non-Trad University, α_{1_200}	1.06	1.88	
Professional Institute, α_{1_300}	5.28	13.74	
Student, α_{1_400}	-2.32	3.46	
Other, α_{1_500}	1.53	4.44	
None, α_{1_600}	0^b	-	-
Affectivity			
No Respect - Mean, α_{2_100}	5.49	2.97	
Respect - Mean, α_{2_200}	7.71*	2.61	
Continuity			
Fixed Term, α_{3_100}	-3.93 *	1.52	

continued

Fixed Effect	St. Coefficient	St. Error	
Replacement, α_{3_200}	3.31	6.14	
Invoice, α_{3_300}	-55.63*	28.19	
School			
Cultural Capital			
Values - Mean, ϕ_{1_100}	12.53**	3.42	
Education Quality - Mean, ϕ_{1_200}	66.70**	8.46	
Teacher RS - Mean, ϕ_{1_300}	-36.88**	10.25	
Classmate - RS Mean, ϕ_{1_400}	21.96*	9.05	
Discipline			
Negative Behavior - Mean, ϕ_{2_100}	16.61**	4.82	
Teacher Environment - Mean, ϕ_{2_200}	6.91**	1.54	
Violence - Mean, ϕ_{2_300}	17.78*	5.33	
Student Assessment - Mean, ϕ_{2_400}	-28.72**	4.68	
Solving Problems - Mean, ϕ_{2_500}	0.36	4.86	
Well-Rounded Education			
Drugs - Mean, ϕ_{3_100}	3.74	3.01	
Healthy Habits - Mean, ϕ_{3_200}	-22.99**	3.53	
Joint Decisions - Mean, ϕ_{3_300}	-3.00*	1.32	
Random Effect	Variance	St. Error	% of Variance
Mathematics			
Students, σ^2	1933.47**	20.88	78.1
Classrooms, τ_π	90.54**	11.48	3.7
Schools, τ_β	453.12**	40.88	18.3

Table 7.6: *Three level conditional model using students and family characteristics as predictors at level 1 and classroom predictors and school predictors (Model 4).*
b. This parameter is set to zero because it is redundant.
*$p_{value} < 0.05$, **$p_{value} < 0.001$

The purpose of this chapter was to explore new predictors identified by teachers during the interviews conducted in Chile. How SES impact students' academic achievement had been studied before (Barr, 2015, Lucas, 2009, Pokropek et al., 2015, Quezada-Hofflinger and von Hippel, 2017), however it was important to explore teacher perceptions and how those were reflected in student academic achievement when using a stan-

dardized test to measure them.

A pattern can be identified from the multilevel analysis of mathematics SIMCE scores; students within the same classroom differ in scores, the proportion of variance at the student level is more than 55% in all models, which is consider higher when compared to the other two levels, which could reflect how much background characteristics (parental expectations and SES) impact student academic achievement. Additionally, personal skills was created using four questions, out of the total of four predictors, two of them have a positive impact on predicted math scores: do things good (almost all the things that students do have a good outcome), and learns easily (students feel that it is easy to learn). Surprisingly, homework (being able to do homework, even when it is hard) and good grades (students believing that they can receive good grades at school) have a negative impact on predicted SIMCE mathematics scores. In other words, thinking about having good grades and doing homework have a suppressing effect. Study habits was represented by: study more, like studying, and doing homework. As students reported spending more time studying when they had bad grades and doing homework it led to an increase in SIMCE scores. However, like studying had a negative impact on scores, and this could be due to the fact that enjoying studying does not necessarily mean that students are studying correctly or efficiently and they may need support from their teachers to create more effective studying habits.

On the other hand, classroom variances are significantly smaller compared to student and school variance. This means that within the same school differences between teachers are not significant, and teacher background characteristics such as where they obtained

their credential is similar. There are two sub-dimensions considered significant: affectivity and continuity. Affectivity as a sub-dimension has two components: respect among the different actors inside the school, and teachers demonstrating no respect, which is defined as teachers not showing respect for students. Both predictors had a positive impact in predicted SIMCE mathematics scores, however the effect of showing respect among the different actors inside the school was higher than teachers not showing respect for the students. From teacher interviews it was expected that no respect would have a negative impact on SIMCE scores, thus these results are not consistent with teacher perspectives. For continuity, being hired as a permanent contract was used as a reference group, and the only difference that was not significant was being hired as a replacement teacher. Results showed that having less than a permanent contract would lead to lower test scores for teachers hired as fixed-term and invoice.

Finally, schools differ from one another in mathematics SIMCE scores, and substantial variation exists between schools, with more than 18% of the total variance, suggesting that school choice is more important than the teacher that students are assigned to at any given school. These results are consistent with previous research which suggests that the level of polarization within the Chilean school system has been constant, and in some cases increased since 2000 (Espinoza et al., 2013, Villalobos and Valenzuela, 2012). Cultural capital has only one question negatively impacting mathematics SIMCE scores, and the other three components have a positive impact on students' academic achievement. The results also show that for discipline out of a total of five predictors, four of them had a positive effect on mathematics scores: negative behavior, teacher environment, vi-

olence and rules, and solving problems. Assessment of behavior had a negative impact on mathematics scores, and it was statistically significant. Additionally, out of a total of three predictors for well-rounded education, only one of them had a positive impact on SIMCE mathematics scores: drugs. Surprisingly, as the school promotes healthy habits (for example, the benefits of physical activity, or eating healthy) and when the decision are made taking into account teachers perspectives mathematics scores tended to decrease. Teacher perspectives of a well-rounded education was related to students being able to connect the different areas of the national curriculum. For example applying mathematical knowledge to physics, or history. The questions capture knowledge that was not part of the national curriculum in Chile, therefore the results, despite being significant, fail to fully capture the concept of a well-rounded education as defined by teachers during the interviews.

In Chapter 8 I will discuss the results presented in chapters 6 and 7 to provide context for the research questions asked, comparing and contrasting the results with the literature presented earlier in Chapter 4. I will end with the limitations and future directions that can be taken from these results.

CHAPTER 8

Conclusions

This dissertation used a mixed method approach to explore qualitatively and quantitatively the question: How the variables identified by teachers affecting student achievement are related to the privatization and decentralization of the educational system in Chile since the change in the Constitution respect to education in 1980? First, it identified predictors using high school teacher interviews conducted in Chile, and second it explored interview findings using the SIMCE database for high school students scores. The last two questions that will be answered in this chapter are:

1. Do the variables identified by the teachers correspond with the introduction of market-oriented policies in Chile?

2. How do the variables identified by teachers explain students' academic achievement gap?

This chapter will contextualize the qualitative analysis presented in chapter 6, using the results from the quantitative analysis in chapter 7. Specifically, this chapter intend to address how inequality is being perpetuated within the Chilean school system, and how student academic achievement is being more influenced by family background characteristics and school characteristics rather than the educational system. As a consequence,

disadvantaged students are being segregated and subsequently prevented from accessing a quality education, instead being isolated in lower performing schools, thus perpetuating the already established unequal social structures in the country, rather than increasing social mobility. The educational system should provide equal opportunities to all students, regardless of their background characteristics, which often determine the characteristics of the school they attend.

8.1 Market-Oriented Policies and Academic Achievement

Since the 19th century the process of schooling in Chile was socially unequal; initially access to formal education was determined by geographic location (urban vs. rural), rather than SES. Populations living in urban areas had access to a formal education, especially in Santiago, the capital of Chile. However, rural populations largely did not participate in the formal schooling process; the number of schools in the countryside was lower, and access was determined primarily by the distance from the nearest school. Furthermore and importantly, families did not send their children to school in these more rural communities because they needed the economic resources that the children provided in order to have enough household income. This differences in access marked the historical beginning of an unequal distribution of educational resources, and the intergenerational transmission of inequalities.

Efforts made by the state to provide access to the whole population, regardless of geographical location, increased literacy rates, and provided opportunities to the most needed population. The Law for Compulsory Education of 1920 helped with enroll-

ment rates in the rural areas, however some schools were still lacking students during the school year. Ten years after the implementation of the law, in 1930 the number of students enrolled in primary education increased significantly, as the state focused efforts on providing access to primary education and increasing literacy rates. Despite the efforts, the elites in Chile still had more years of schooling, which transferred the privileges into the working sphere. These privileges that the elite acquired through the process of schooling were transferred from one generation to another, and therefore the school system started to act as an agent of social reproduction rather than increasing social mobility.

It was later under the government of Salvador Allende when Unified National School (ENU) was proposed. The efforts made to further equalize access to quality of education to improve standards of living among the most disadvantage population still had not been enough. Yet, ENU was never implemented and the social policies associated with it ended with the *Coup d' état* in 1973 and the incorporation of market-oriented policies into the educational system; it was the decentralization and privatization of the school system that drastically transformed the educational system in Chile. Both impacted student academic achievement when measured using standardized tests and access to tertiary education, nevertheless the impact is also at different levels. For example school choice tends to favor the private over the public sector, parents associate the added fees from the private-subsidized schools with greater quality, thus further reducing the economic resources available for public schools (Hsieh and Urquiola, 2006, López Guerra and Flores Chávez, 2006).

Since 1980, resources available to public schools depend on municipal administra-

tion, when the state transferred the economic responsibility to the municipalities, or local governments. Thus, decentralization can be associated to teacher and school levels, or dimensions. In a context marked by lack of resources, accessing quality education is not common, and there are a few public schools in Santiago categorized as providing quality education (having higher scores in standardized test the average public schools), however the number of students applying to them is higher than the openings, thus making entry highly competitive. Additionally, those schools start from the first grade of high school, thus when students come from disadvantages already experienced in primary education, the access to high performance public schools becomes further compounded.

The privatization process helped high and medium-high SES families while segregating low-income families in the public sector. Privatization provided the opening of new schools giving parents the advantage of choosing schools based on their own preferences. Since private and private-subsidized schools can charge additional fees to families[1], background characteristics, specifically income determined access to them. Thus, the privatization process of the educational system can be associated with student background characteristics and is defined as both a family and student dimension.

From the analysis of teacher interviews the main variables affecting student achievement identified were categorized into four different dimensions depending on the actor involved in the process: family, student, teacher and school. Furthermore, variables that parents consider important when choosing a school were also identified from the interviews, i.e. what are families looking for when they choose to enroll their children in a

[1]On March 1st of 2016 private-subsidized schools started the process of gradually transform them into public or private schools.

certain school? Using the information provided by the teachers, it was also identified other variables affecting standardized tests scores.

Figure 8.1 shows every actor identified using teacher interviews who impact student academic achievement. The arrows represent both positive and negative impacts in academic achievement. For example in the student dimension, thinking about having good grades had a negative impact on predicted SIMCE scores (thinking about having higher grades means lower predicted SIMCE scores), meanwhile family SES had a positive impact (higher SES means higher predicted SIMCE scores).

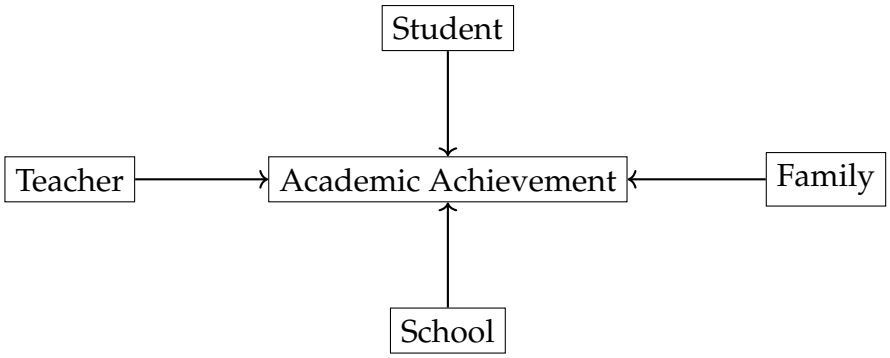

Figure 8.1: *Academic achievement influenced by the four dimensions identified by teachers.*

From the teacher interviews it seems that neither the type of school where teachers work nor their years of experience affected which variables teachers identified as affecting student academic achievement. There is not a clear pattern of how teacher background characteristics influence the variables that they mention in the interviews. Further, in general teachers more frequently mention variables within the family dimension than any other dimension. Additionally, teachers identified more variables within the teacher dimension than in the other three dimensions created. This could mean that teacher saw themselves as the ones responsible for increasing educational quality, rather than being

the system providing support for students, however without help from their schools the chances of increasing student academic achievement is probably lower.

When looking at results from HLM the percentage of variance explained by student background characteristics was significantly higher than at the classroom or school level, supporting the idea that the school system is acting as an agent of social reproduction rather than providing equal opportunities to all students regardless of student background characteristics. Among these characteristics mentioned by teachers were socioeconomic status and cultural capital, two variables directly impacting in student learning (Cornejo and Reyes, 2007), which can not be changed at the school level, leading to intergenerational transmission of inequalities and poverty (Aschaffenburg and Maas, 1997, Harker, 1984). Moreover, the percentage of variance explained by the school level was also significantly higher compared to the classroom-teacher level, even when among the predictors mentioned by the teachers was not type of school, which could decrease more the percentage of variance at the school level.

Is it possible that schools are acting to reproduce social inequalities rather than increasing social mobility? One predictor that is highly correlated with student academic achievement in standardized tests is SES within the school. Economic school segregation, in other words, grouping of students with similar socioeconomic level of the school is one variable that explains most of the differences in student learning. This is specially relevant in the Chilean context, where schools are highly segregated (Carrasco et al., 2014, Elacqua, 2012, Santos and Elacqua, 2016, Valenzuela et al., 2008b, 2013). The educational system in Chile is reflecting and reproducing social inequalities, and perpetuating the

homogenic composition that exist within each school. It is not surprising that at school level the percentage of variance explained represents 18.3 of the total variance in the final model, even when administrative dependency was not in the predictors mentioned by teachers during the interviews. In other words, student background characteristics are the ones perpetuating the social class structure in Chile.

One question that arises from market-oriented policies was: Should competition increase student academic achievement? Market-oriented policies support the idea that providing vouchers to schools per enrolled student will increase achievement through competition. However, teacher interviews did not mention competition as a factor impacting student academic achievement either negative or positively. This could mean two things; first, teachers do not see competition as a way to improve education quality. Second, school practices to increase SIMCE scores are not increasing quality, preparation for the test only increases scores. When the school system rewards or sanctions school based on average standardized test scores created incentives for implementing practices that benefit increasing scores rather than improving quality, and pushes lower-performing students into special education (Darling-Hammond, 2007), or the school pushes low-performing students to not take the test by asking them to not come the day of the test, as it was mentioned by some teachers during the interviews.

There are external motivations to increase SIMCE scores for teachers. Higher SIMCE scores are associated with monetary bonuses that go directly to all school workers, and as a consequence attention is shifted from providing quality and improvement of education to increasing scores (Vallejos Pedreros, 2012). That is, this bonus corresponds to

all teachers, whether or not they teach classes evaluated by the SIMCE test or not, which makes teachers of classes that are not evaluated by SIMCE more willing to agree to provide their weekly hours in post to prepare the test, especially close to the day of SIMCE. Consequences for the students are negative, as students are being denied the possibility of receiving a well-rounded education, focusing only on the classes evaluated by the SIMCE and training them to answer SIMCE-type questions (multiple choice). Differences are even greater when teachers from private schools are compared to teachers that work in public schools. In general, higher SIMCE scores coming from private schools are a direct result of the quality of education that students receive throughout the school year[2], while public schools tend to prepare for test by focusing almost exclusively on getting high scores, rather than looking to improve the quality of education. This preparation is based on exposing them to practices exams, and thus training them repeatedly to take the test.

There are some limitations for teacher professional development. First, teachers focus on teaching to the test rather than providing students with the necessary tools to develop themselves holistically (Vallejos Pedreros, 2012), which as mentioned previously, leads to a dismissal of other classes not evaluated, thus denying the opportunity to teachers who do not teach classes evaluated by the SIMCE to develop new teaching methodologies. As a consequence of those practices, student learning outcomes are negatively impacted by denying them the opportunity to have a well-rounded education, which was a factor

[2]When looking at quality of education at private schools from parents' perspective, it is assumed that all private schools will provide higher quality than any other school (Bellei et al., 2020). In other words, when high SES parents choose a school, they do not look at SIMCE scores, because they assume that education quality is already good.

consistently mentioned by the teachers. Providing a well-rounded education is one of the central elements that a school should change looking to improve student overall academic achievement (Cornejo and Reyes, 2007).

Finally, the variables identified by teachers during the interviews provided an insight to how student academic achievement is seen inside the classrooms. Some of the variables used for the analysis were studied before, like SES or cultural capital, however new variables were also added based on the qualitative findings. Those new variables did provide insightful information, and informed to how decrease social reproduction and provide students with more equal opportunities. For example, improving student study habits could potentially increase academic achievement, which is a predictor that can be changed at both the family and teacher levels respectively.

8.2 Limitations and Future Directions

This study used teacher interviews to explore variables affecting student academic achievement, exploring the idea that there are additional factors impacting that achievement. There were predictors that have been already studied in previous research, thus changing the emphasis and investigating those new factors could allow for a determination if there are new predictors that could help to better understand what is affecting student academic achievement (González Barbera et al., 2012). Some of the predictors identified by teachers during the interviews were not significantly impacting SIMCE scores, and the percentages of variance explained by them were low. Since the goal was to explore new predictors from teacher perspectives it could be plausible that SIMCE scores represent

academic knowledge; however, what actually happens inside the classroom is more than that, and the human relationships developed are not captured by standardized tests. It is still important to investigate quantitatively teacher perspectives, to provide more information from inside these classrooms.

The results presented in this study could differ from others using the same variables if a different definition of the sub-dimensions created is used. For example, cultural capital was defined as the convergence of human, economic, and social capital. However, it can also be defined as educational qualifications (Bourdieu, 1987), or transmissible parental cultural codes and practices capable of securing a return to the students (Tzanakis, 2011), or proficiency in and familiarity and knowledge of dominant cultural codes and practices in the society (Aschaffenburg and Maas, 1997, Dumais, 2002, Sullivan, 2001). Therefore, selecting different questions could potentially change the results obtained in this study.

There was also inconsistency in the how some sub-dimensions were developed and the definition that teachers used during the interviews, such as in the example of well-rounded education. During the interviews, teachers used well-rounded education as a descriptor when students are able to apply mathematical knowledge into physics, develop an electrical circuit, or when in literature students apply their knowledge to develop a puppet show using different language forms. However, for the quantitative analysis, well-rounded education was developed using questions regarding teaching about healthy habits, such as about drugs and sexuality, which capture knowledge outside the national curriculum. The questions used failed to capture the concept of well-rounded education used by teachers.

The inability to use a complete database for the multilevel model analysis can be a limitation, since the initial analyses were made using the complete database. However, due to lack of computer power the analyses were made using a smaller sample size, which even when it was representative of the population, it was not the full sample. Doing the analysis using the full sample could potentially alter the results, however the changes should not be significantly different, since the sample was representative of the population. Other future directions could be doing the same analysis for every region in the country independently, as every region probably has different needs, and the results could also vary in terms of student background characteristics. Depending upon the region, student background characteristics could be more homogeneous than in Santiago, thus changing the results from the HLM and the variance explained at level 1.

As discussed previously, using questions different from those used in prior research could provide important insight on what should be the focus of future policy implementations for increasing student learning opportunities. It is not enough to know that student background characteristics are the most important predictors of student academic achievement, as it is vital to also understand which predictors can be modified within the school system to provide more equal opportunities. Regardless of any set of characteristics, every student needs access to a quality education, and it is the responsibility of that school system to be the equalizer by increasing social mobility, rather than helping maintain existing social structures.

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